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OPERATIVE EVACUATION OF THE SMALL INTESTINE IN PARALYTIC STASIS*

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THE subject of the surgical problem and its management which I wish to lay before you may be introduced by the citation of two case histories.

C. H. T. No. S-39299, male, 57 years old, seen in consultation July 27, 1931, had been ill one week with acute abdominal symptoms including pain, vomiting, obstipation, fever and chills; examination showed an obese man with hugely distended but not tender or spastic abdomen, a fever of 104° and leucocytosis of 11,000. The outstanding symptoms were those of intestinal stasis, obstructive or otherwise, whose underlying cause was not evident. An immediate cecostomy was made under novocain anesthesia; neither the appendix nor anything else abnormal could be felt through the small incision. In spite of fair drainage the non-spastic and non-tender distention persisted, due apparently to intestinal paresis, and an average of two exhausting chills daily occurred; jaundice appeared; a presumptive diagnosis of suppurative pylephlebitis and probable abscess of the liver was made,—cause unknown—, a radical exploration determined on and a probably fatal prognosis given. Blood cultures were negative. On August 3, 1931, one week after the cecostomy, under avertin and local novocain infiltration anesthesia, the abdomen was opened freely but the exploring hand could demonstrate nothing except universal small intestine distention, without peritonitis. The incision was enlarged and the small intestine completely eviscerated and wrapped in thin rubber sheeting, and kept warm by hot compresses; with this exposure it was possible to observe edema of the terminal meso-ileum and other tissues in the ileo-cecal angle, which led to the discovery of a small retrocecal abscess containing foul B-coli pus, undoubtedly of appendiceal origin. The pus was aspirated and drainage instituted, no attempt being made to find or remove the appendix, since time was precious and the fixation of the cecum by the cecostomy was an obstacle. The eviscerated jejuno-ileum was now examined; its coils were greatly and uniformly distended and to return them to the abdominal cavity was obviously impossible. The bowel was in part of purplish hue and in part anemic looking, and in several places its serosa was split by stretching. A rather stiff No. 20 F. hollow urethral woven bougie was introduced with suitable precautions through a small incision in the terminal ileum and gradually worked along the lumen of the bowel, whose successive coils were drawn along it, while a very large amount of thin, foul, fecal fluid and gas was evacuated. Owing to the lack of rigidity of the bougie it could not be made to penetrate to the proximal jejunum, the last few loops of which were milked toward it. When evacuation was as complete as possible the bougie was withdrawn, the contaminated surface near the opening cleansed and the opening appropriately closed. Irrigation of the inside of the bowel was not done. The operation lasted an hour and a half, and seemed not to have shocked the patient;—indeed, pulse, blood pressure and respiration were unchanged and his appearance was better. The patient had a prolonged convalescence but made a complete recovery.

The second patient was a woman—M. K. F., No. S-40799, 44 years of age, who had been operated on for strangulated femoral hernia, requiring resection of gangrenous ileum and end to end anastomosis which was done by the basting-stitch aseptic method. The patient developed the symptom-complex of acute intestinal obstruction on which was superimposed on the fourth day unmistakable evidence of a rapidly diffusing peritonitis. It was recognized that the anastomosis had not functioned and had finally developed fecal leakage. The patient's abdomen was tender, rigid and much distended and she was having regurgitation of intestinal contents. It was evident that only a radical and desperate operation could save her, which was carried out under basal avertin and supplementary ether anesthesia. A generous incision was made which revealed the intestines uniformly distended, purple, with many patches of fibrin, and a considerable amount of fecal fluid bathing the lower abdomen and pelvis. After a vain attempt to demonstrate the condition without more exposure, complete evisceration of the entire small intestine was permitted and encouraged, the coils of greatly distended bowel being received and enclosed in thin rubber sheeting and kept warm by hot compresses externally. The defective and leaking anastomosis which was close to the cecum was demounted and a large, stiff woven catheter with Coudé tip was introduced into the intestine proximally, draining a large amount of foul brown fecal fluid. Successive loops of intestine were drawn over the tip of the catheter until the whole length of the latter was occupied by the folded gut, but there still remained several feet of proximal jejunum undrained, which was now gently and systematically milked from a point near the duodenum distally to the tip of the catheter. Thus nearly the whole small intestine was evacuated of fluid contents estimated at between 3 and 4 litres, as well as much gas. No irrigation was done. A new anastomosis, side to side, was now made, the lower abdominal and pelvic cavities which were well exposed to view were gently cleansed by suction, and the coils of small intestine, released from their rubber envelope, were carefully and gently washed off with normal saline. They had lost their distention and their sinister purple hue, and it was a simple matter to return them to the abdomen and close the wound

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(with a small drain to the anastomosis) with a minimum of manipulation. The operation lasted one and one-half hours and the patient at its close showed little evidence of shock;—the pulse, respiration and blood pressure being the same as at its beginning, and the sub-cyanotic color having improved. She made a rapid and complete recovery, complicated only by wound sepsis.

These are the two most striking examples of a group of eight cases* in which expedients of a similar but not always so thorough type were carried out to combat serious instances of intestinal stasis and distention, and the amazing fact is that every one of these patients recovered. While a complete examination of personal records has been impossible, it is not known that any fatalities resulted among patients thus treated, whereas cases treated less drastically showed the usual mortality rate.

No principle of surgical technique is more universally taught and observed than that manipulation of the intestines, especially if combined with the cooling, desiccation and traumatism attendant on evisceration, will certainly result in surgical shock which may turn the balance against the patient. It is not necessary to cite many authorities in support of this, since they may be found in nearly every textbook of surgery and physiology. Murphy[1], writing in Ochsner's Surgical Diagnosis and Treatment on intestinal obstruction, expresses the prevailing view when he says: "Probably no single manipulation in these cases adds so greatly to the surgical shock as evisceration", and again: "The insertion of a tube into the coils of intestine for the withdrawal of the contents, as advocated by some, is, I believe, a most dangerous procedure; . . . the mucous membrane is still further traumatized, a more rapid absorption of the contents is made possible, and it is inconceivable that all of the toxic content can be removed." DaCosta[2] says: "Until recently it was surgical custom to break up adhesions, eviscerate, wash out the belly, wipe out the pelvis,— . . . we thus produced dreadful shock." . . . Homans[3] in his Textbook of Surgery, speaking of peritonitis, says: "The peritoneum should be handled with gentleness, care should be taken to preserve the limiting adhesions, irrigation should not be used and evisceration should be avoided." These authorities will suffice to indicate the prevailing opinion.

I cannot deny the wisdom of these views broadly applied, but on the other hand I have no doubt that each of these authorities, if confronted by the awful dilemma of certain instances of intestinal stasis, would violate his expressed principles by some such expedients as were used in the cases reported above. The theme I wish to propose and defend is that the fear of "peritoneal shock" is so much a part of our surgical consciousness that we are in danger, both in our practice and our teaching, of failing to take heroic measures to correct desperate conditions, measures which, though violating established precepts, may nevertheless be surprisingly successful. I hasten to add, lest it be thought that I am proposing something original, that there is much that is confirmatory in the literature.

Every general surgeon is unhappily familiar with the clinical problem presented by the patient on the third to the sixth day of paralytic intestinal stasis due to peritonitis, or to some circulatory disturbance of the intestine, or to both. The abdomen is greatly distended and tympanitic, no peristalsis is visible or heard with the stethoscope, obstipation is complete and enemata are without effect; there is regurgitant vomiting of intestinal contents, the respiration is rapid and shallow, the pulse poor, the color subcyanotic, and sweating and prostration betoken severe toxemia. If the condition is not relieved, the complete syndrome of the terminal stages of general peritonitis and intestinal obstruction becomes established and death is inevitable. What is the mechanism of this disaster? First, if bacterial peritonitis is present, the absorption of its toxins or the actual invasion of the blood stream by the organisms poison the system; secondly, the virtual cessation of all but costal breathing due to the crowding upward and fixation of the diaphragm diminishes the vital capacity of the lungs, embarrasses the heart and causes relative anoxemia; thirdly, the stagnating, putrefying, fermenting intestinal contents cause increasing distention of the intestine which in turn causes impairment of the circulation in the gut, venous stasis, edema, diminished vitality of the mucosa with actual necrosis, depression and paralysis of the intrinsic neuromuscular mechanism of the intestinal wall,—the plexus of Auerbach. It is not necessary to enter the controversy about the production of a specific toxin in the intestine in various types of intestinal stasis; nobody denies that this stagnating fecal pool swarming with bacteria of exalted virulence is the source, by absorption of a severe and ultimately fatal toxemia.

What is the accepted treatment of such a condition? It is understood, of course, that dehydration and the fall of blood chlorides is to be combated by supplying normal saline, washing out the stomach, perhaps carrying out the essentials of the Ochsner treatment, but unless these Fabian policies succeed, something more radical must be done for the underlying abdominal lesion. The establishment of a simple vent in colon or ileum will not solve the immediate problem, as it would in the case of a simple mechanical obstruction due to a neoplasm or a band, by relieving the stasis and permitting a later and leisurely attack on the cause. If peritonitis is

*The six additional cases may be found in the Peter Bent Brigham Hospital records under the following numbers: S-26503, S-25259, S-3264, S-6910, S-32613, S-32826.

present, there is general agreement that the source should be removed or corrected and drainage established. If a lesion jeopardizing the circulation threatens gangrene, it must be found and treated. But the fear of peritoneal shock obsesses the surgeon, who makes a relatively small incision, keeps within the abdomen the distended, congested, purple bowels with their stagnating poisonous contents, and under serious handicaps accomplishes what he can and makes a difficult closure. Perhaps some extrusion of intestinal loops may occur and he makes one or several trocar punctures, thus securing partial evacuation, or establishes an ileostomy, but he hesitates to make a radical and determined attack on the two serious obstacles to recovery — intestinal distention and stasis, with their attendant evil consequences.

There is to be found, however, in modern textbooks warrant for a more radical course. Moynihan[4], after pointing out that it is the overloading and distention of the gut and the absorption of its toxic contents which call for relief, says: "No operation for acute obstruction can be considered complete which leaves an intestine, whose function is to absorb, overdistended by contents of an offensive and poisonous nature." He then describes the introduction into the intestine a few inches above the obstruction of a glass tube 6-8 inches long on which can be drawn 8-10 feet of intestine, which is thus evacuated and may be washed out; he speaks also of puncturing at a higher point and washing downward. He does not mention this procedure in the stasis of peritonitis. Bickham[5] mentions aspiration of the distended intestine by simple puncture and adds: "Other more elaborate methods of evacuation are sometimes employed", and elsewhere describes Moynihan's method. DaCosta[2] says: "Some surgeons strongly advise the removal of the accumulated material above the obstruction, believing that it is very toxic; this is carried out through an enterostomy opening by milking or stripping the small intestine",—and again: "The emptying of the bowel content is also warmly sponsored by many German surgeons." These remarks are applied apparently to mechanical obstruction but not to the stasis of peritonitis. Munro[6], writing on "Peritonitis" in Keen's Surgery, says: "In cases with distention, the gut may be opened in one or more places and emptied of its contents or the entire length may be stripped or 'milked' down to an opening in the distal portion, thus relieving the patient of a large amount of poisonous material. Kocher opens high in the jejunum and low in the ileum, washing the gut through and through. Most surgeons avoid evisceration . . . ." In Jacobson's "Operations of Surgery"[7] in the chapter dealing with intestinal obstruction, reference is made to "Kummell's plan of allowing the small intestines to prolapse under warm and moist aseptic towels, the objection being that it is often very difficult to get the intestines back, and the manipulation and exposure must produce shock"; the writer then mentions, but evidently without conviction, Moynihan's method of evacuation by a tube. Haggard[8] in the chapter on "Peritonitis" in Oehsner's Surgical Diagnosis and Treatment says: "When there is great distention of the intestine, emptying one or more loops by a glass tube . . . after the method of Moynihan is extremely important; . . . washing and trauma are harmful." Hartwell and Cooper[9] in their article on "Intestinal Obstruction" in Lewis' Surgery speak of evisceration into a moist rubber dam (as recommended by the present writer) and evacuation by a long tube introduced through an enterostomy, and add: "While these procedures sometimes yield most satisfactory results, they possess serious drawbacks; . . . often the kinking . . . prevents sufficient evacuation; . . . the procedure is surgically unclean and peritonitis may result." No mention of the method is made in the article on "Peritonitis." Holden[10], describing an operation for acute intestinal obstruction mentions evisceration of the bowels into hot salt napkins, saying: "This step has been criticized as causing shock; there will be little or no shock if the intestines are kept warm and no tension is made on the mesentery." Later, having divided the obstructing band he says: "The obstruction is relieved, but if we stop the woman will have a stormy convalescence; the contents are toxic and patients do much better if this imprisoned material is removed." He then describes the insertion of the flanged end of a ¾ inch test tube (with the end cut off) into the ileum and the emptying of the bowel by milking; the implication is that this is a frequent procedure in his clinic, but he does not mention its use in peritonitis.

It is of especial interest to members of the New England Surgical Society to recall that one of our charter members, Dr. George H. Monks, was a pioneer in this field. In 1903, in the course of studies on "Intestinal Localization"[11], he showed that in the cadaver 20 feet of small intestine may be drawn onto a rigid rod not more than one foot in length, and in a footnote he speaks of the possibility of "introducing into the gut when freely exposed in an operation a rigid tube for purposes of inspection or for the removal of gas or other intestinal contents, . . . it is of course uncertain to what extent the shock and danger of infection in connection with such procedure would prevent its use". Two years later[12], having noted that when an enterotomy is done to relieve distention, but little gas or other contents is discharged, so that meteorism is but little relieved, he conducted further experiments on the cadaver to determine the practicability of intestinal evacuation. He found that a simple enterotomy

drains but the adjacent loop or two; that an elaborate milking process is necessary to empty the bowel; that to wash through the bowel from a high to a low opening is impossible,—Kocher to the contrary notwithstanding,—since the bowel ruptures long before the fluid has passed any great distance down the gut; that a rod cannot be pushed far into the lumen without being obstructed by folds, but that the bowel readily may be drawn or threaded onto the rod. Having thus demonstrated the practicability of evacuating and flushing the intestinal canal on the cadaver, the opportunity[13] came two years later to apply the method clinically. The patient was a girl eight years of age with an acute general streptococcus peritonitis, in deplorable condition, with fever of 102°, pulse 180, cheeks drawn and sunken, skin clammy, respirations shallow, lips parched; the abdomen was opened disclosing free pus everywhere whose cause could not be determined. In spite of the patient's desperate condition the operator persisted, the abdomen was irrigated with a large glass tube, the bowels were partially eviscerated, the tube introduced high in the jejunum, a second opening made three feet lower and the bowel washed through; the upper enterostomy wound was then closed and the tube re-introduced in the lower wound and "the rest of the intestinal canal was flushed. The anesthetist reported an immediate and striking improvement in the condition of the patient. The wound was closed with drainage, and a rectal tube drained 1½ quarts of intestinal contents and salt solution. The patient made a complete recovery". Dr. Monks was convinced that the patient would have died without the procedure; in his discussion he emphasized especially the filling of the intestine with hot saline after flushing, thus supplying fluid and heat. In a subsequent communication[14] the same author reported experiments showing that in the cat the whole intestine can be flushed through two enterotomy openings without causing shock or peritonitis, and in the human cadaver the small intestine could be flushed through 3, 4, or 5 openings, but the attempt at flushing the colon through the lower opening was not so successful. His conclusion was that the procedure should be advocated "when the patient has acute intestinal poisoning associated with great distention of the bowels".

Doubtless painstaking search of the literature would bring to light many instances where bold and ingenious surgeons have adopted methods similar to those under discussion. Thus Dr. George Haslam[15] of Lincoln, Nebraska, in 1903, convinced that the bacterial toxins of peritonitis are excreted into the bowel and vomited by the patient, and encouraged by temporary improvement in several cases where he had made partial intestinal lavage through enterotomy openings, treated by more radical measures a boy aged 14 suffering from appendiceal peritonitis. The boy was described as distended, hiccoughing and vomiting black material. An appendiceal abscess was drained and the general peritoneal cavity washed out with saline. A median incision was then made, an 18-inch loop of jejunum withdrawn, opened at each end, "as much of the bowel as possible washed out" and the openings stitched in each end of the wound. The bowel was described as dark in color, almost 3 inches in diameter and obviously completely paralyzed; it was irrigated during the convalescence, which was complete. "As a result of this case", says the author, "I for one shall not hesitate to perform a high double enterostomy and irrigate the bowel in any case of severe intestinal paralysis, provided that the patient be not actually dying." Dr. Edmund M. Pond[16] of Rutland, Vt., recorded the case of a girl ten years of age suffering from acute appendicitis and general peritonitis. The patient was described as semiconscious, with intermittent pulse of 140-160 and an enormously swollen and tender abdomen. Operation was undertaken at the insistence of the father. After starting the ether the anesthetist reported that the patient was dying. The ether was stopped, nitrite of amyl and four different kinds of "stimulants" administered "as fast as the syringes could be filled", while the bold surgeon proceeded to open the abdomen, evacuate foul pus estimated at two quarts from the peritoneal cavity, irrigate the latter with saline, remove the appendix, perform an ileostomy and pass the irrigating tube into the intestine in both directions, "until the bowel above and below the incision was thoroughly unloaded". The patient made a stormy but complete recovery as a sequel to,—if not as a result of,—this operation and the subsequent hypodermic injections of brandy, strychnine and nitroglycerine, stimulating enemata, calomel in 20-grain doses and finally croton oil. Making due allowance for the hyperbole which may be allowed the paeans of victory, it seems fairly certain that this patient was very ill and made an unexpected recovery. The author concludes that "by the adoption of this method in cases of general suppurative peritonitis and others where the bowels are paralyzed by morphia or sepsis, many cases now considered hopeless will recover".

Here then are recorded two personal cases with mention of six nearly similar ones, and there also are gathered from the literature several others, in which patients desperately ill with intestinal stasis, distention and toxemia, whose lives were nearly despaired of, were treated by intestinal evisceration and evacuation, with recovery in every instance. Here also are noted the classical belief that such manipulation and exposure are necessarily productive of serious surgical shock, and also the opinions of some modern writers that a meas-

ure of such methods is justifiable in desperate cases. In spite of the existence of these expressions in textbooks, it is my impression that, with some exceptions, authors make these recommendations but half-heartedly and without conviction, and that the generality of surgeons would feel that they were administering the coup-de-grace if they employed such methods. The theme that I wish to propose and defend, is that evisceration of the entire small intestine does not necessarily produce shock, if the loops are received in and kept covered by a smooth wet sheet of thin rubber dam kept warm by hot fomentations to its outer surface; that the whole of the small intestine can be evacuated by a rigid or semi-rigid tube introduced into the terminal ileum, and on which its successive loops are pulled, if necessary "milking" any loops which remain; that with appropriate measures to prevent soiling the danger of thus setting up a peritonitis is small; that by this means two of the three mortality producing factors are effectively dealt with,—namely, abdominal distention due to intestinal paralysis and causing cardiorespiratory failure and consequent anoxemia, and the accumulation and absorption of evil toxins developing in the stagnating intestinal cesspool; that with this exposure of the abdominal cavity the underlying cause,—be it mechanical or inflammatory—can be effectively dealt with; that the procedure completed, the abdomen may be closed with the greatest of ease and a minimum of harmful manipulation.

Doubtless the judgment born of experience will tell the surgeon in what instances the removal of the focal cause of peritonitis or of obstruction may be expected to secure the subsidence of a threatening intestinal distention and stasis without the need of a resort to more drastic measures, and will no less restrain his hand when the patient is beyond human aid. My plea is that the stasis of intestinal contents and the distention be regarded as pathological phenomena absolutely requiring adequate relief and that surgeons shall undertake to promote this, if necessary, by the deliberate evisceration of the small intestine and the evacuation of its contents, confident that the risk of surgical shock and of sepsis from such a course may be minimized by the technique suggested, and that a procedure which has been widely regarded as desperate and foolhardy, is in reality logical, reasonable and quite likely to be life-saving.

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Discussion

Dr. Alfred M. Rowley, Hartford, Conn.: *Mr. President and Members* — I have enjoyed Dr. Cheever's paper. Paralytic stasis infers peritonitis. A mechanical obstruction is accompanied with hypertonicity and hyperperistalsis up to a certain point of overdistention. Tube drainage of the bowel has unquestionably saved many lives in the presence of obstruction. Jejunostomy in the last few years has been given up in most cases in favor of the nasogastric tube. Complete healing of the wound of enterostomy does not always follow the removal of the tube. Carrying the tube through the omentum before inserting it into the bowel has helped in the closure of the stoma. In low obstruction of the ileum I have preferred to do a cecostomy rather than an ileostomy because of the greater ease of healing.

I wish to report a case of acute appendicitis followed by obstruction. At operation, when removing the perforated appendix, I noticed a constriction of the terminal ileum from embryonal adhesions, also the presence of a considerable sized mesenteric fibroma in this area. On the fifth postoperative day the patient developed severe pain and visible peristalsis. I reoperated on her and found the terminal ileum ribboned with distended bowel proximal to it. The embryonal adhesions were released, but as this did not sufficiently relieve the obstruction, two days later I did a cecostomy, passing the rectal tube into the cecum, then over the ileocecal valve and for a distance of twelve to fifteen inches into the ileum. I operated in the evening. She was a very sick girl before this, with a high temperature and rapid pulse rate. During the night she drained a large quantity of intestinal fluid and the next day was entirely relieved of the distention. I had a letter from her the other day saying she would return to her school this fall and that she is entirely healed. I have employed this method when doing an end to side anastomosis of the ileum to the colon and, in the case shown in the clinic

this morning, after finishing the anastomosis I did a colostomy and splinted the ileum by passing the tube down its lumen. It acts as a splint and serves the purpose of draining the small bowel.

Dr. Lucius C. Kingman, Providence, R. I.: *Mr. President and Gentlemen*—In regard to this method that Dr. Cheever has told us about, I have had no personal experience. I can think of cases which would at least have done no worse by that method than by methods that were employed.

It seems to me, from this report, that it might be quite worth trying in certain cases, but it also seems to me that it should not be done by anyone unless he is willing to do it with the same care and delicacy of touch that I am sure Dr. Cheever employed. I quite agree with the last speaker about jejunostomy, that in the true paralytic ileus, which is not always easy to differentiate from the mechanical ileus, the jejunostomy seldom drains. It doesn't drain if your distended loop is the loop of volvulus. I have seen that happen. It will often not drain if you stick a catheter in the wrong way and sew it in rather tight, so that as the distention goes down, nothing passes down to where the eye of the catheter is.

So far as jejunostomy goes, we think we can accomplish as much by the Levine tube.

Dr. John Homans, Boston, Mass.: In support of Dr. Cheever's contention, I am inclined to think that one of the benefits which is brought to the patient by his treatment is the relief of acute passive congestion which we all know is dangerous and causes a very remarkable toxic effect both locally and generally, the acute congestion of the forearm which causes Volkmann's paralysis being a familiar example.

I think it is quite possible that, when an acute intestinal distention is relieved, the acute passive congestion which must go with it is also relieved. I am not at all sure that the intestinal contents are so toxic as generally believed. That their absorption is not harmful is shown pretty well by the relief of an acute obstruction where the contents are not removed. So I think Dr. Cheever might give himself credit for doing several things he has not spoken of.

In further support of procedures to relieve distention, you all know that sometimes when a patient is distended and vomiting, if you will turn him over on his abdomen, for some reason or other something favorable happens, and it has always seemed that the blood supply of the bowel has been improved and that the change in posture caused the bowel to resume its function which, before that, it had lost. Therefore I am inclined to think it is not so important to remove the toxic material as to improve the blood supply of the intestines.

Dr. Arthur W. Allen, Boston, Mass.: In support of what has been said about paralytic ileus, I should like to speak of two instances I have seen in the past year where posture really played a rôle. The first patient was a boy who had had a drained appendix and developed intestinal obstruction. Following this he had an ileostomy which worked for a short period of time and then stopped functioning.

He had been treated most of the time in a semi-Fowler's position. After his second obstruction, rectal examination revealed a mass which was rather soft but very distinct and which we thought probably was going to become an abscess. His obstruction did not improve but he was kept in good condition with a Levine tube and with fluids into his veins, and so forth. The time arrived, however, before this mass became firm enough to be an abscess, to warrant another operation for obstruction and, on opening his abdomen on the other side, it was perfectly obvious that the mass we had felt was a tremendously distended loop of small bowel stuck in the pelvis. It occupied the entire pelvis.

While he was on the table, instead of putting another tube in or evacuating this loop, he was simply tilted into a Trendelenburg position to see what would happen and you could see right under the eye the contents of this loop go by the obstructed point. He made an uneventful convalescence.

We had a similar instance where we felt a corresponding mass on another case two or three months later and, by putting the patient up in the Trendelenburg position, the mass disappeared and the patient made a good convalescence.

Dr. Lyman Allen, Burlington, Vt.: I should like to say a word, if I may, in regard to what Dr. Cheever has done.

We have to consider one other thing when we have an obstruction that is mechanical; we are confronted with a lot of distended gut, and, to find the obstruction, frequently we must either paw over the intestine rather roughly or else we must eviscerate so that we can have some room to see. Having eviscerated, we can avoid a certain amount of trauma. To return the eviscerated bowel, still distended, means, as you all know, time and trauma. It traumatizes the bowel somewhat to open it and slip in a rectal tube or a Gouley catheter and empty the bowel, it is perfectly true, but it saves the amount of trauma that would be required to get distended bowels back into the abdominal cavity.

Within two weeks I have seen that done at my home, the draining out of the intestine for the sake of getting the intestine back without trauma. We have done it a good many times and while, of course, these are usually desperate cases and many of them have died, still we have saved some lives.

DR. DAVID CHEEVER: Dr. Lyman Allen exactly expresses the point. If any of you chance to read the paper, you will find that I have discussed the important point that Dr. Homans brought out, that is, the rôle played by acute passive congestion causing edema of the intestine, venous stasis, probable paralysis of the plexus of Auerbach, and of the neuromuscular mechanism which causes paralysis of the intestine.

I want to make it perfectly clear to you all that I assume that in most cases such a procedure would not be necessary and that drainage of the focus or relief of the mechanical obstruction, if such exists, even in the presence of a certain degree of meteorism, would be all that was necessary; then return the bowels and the patients will make a recovery.

The question to decide is when the drastic procedure will be necessary and I want to make it clear that this has little or nothing to do with the performance of simple jejunostomy or ileostomy, which I agree have proved quite disappointing.

In this procedure the intestine is drained and the enterostomy is closed and the intestine returned without further drainage.

NO SLUMP IN ENFORCEMENT OF FOOD AND DRUG ACT

Economic conditions restricted the output of manufactured foods, medicines, and drugs, last year, but did not lighten the task of enforcing the natural pure food and drug law, says W. G. Campbell, chief of the Food and Drug Administration, in his report for the fiscal year 1932, made public recently. The value of the year's output of canned foods alone was $745,000,000, and the value of pharmaceuticals and proprietary remedies was more than $400,000,000. These figures do not give a complete measure of the task since the food and drug law applies equally to all foods and drugs shipped in interstate, import, and export commerce. The Administration enforces five other acts, but the food and drug law is the most important.

In the year the Administration collected 38,815 samples of foods and drugs. The total included an unusually large number of samples of fresh fruits and vegetables examined for possible residues of poisonous sprays. Prosecutions under the act numbered 1,307; seizures of violative goods, 1,260—a total of 2,567 actions. The Administration examined 10,316 samples of imported foods and drugs and detained 3,744 of the shipments.

An important legal action of the year involved a Government seizure of a medicinal product, "B. & M.," for external use, manufactured and shipped by the F. E. Rollins Co., Boston, Mass. The case was reported in a previous issue [*New Eng. J. Med.* 207:427 (Sept. 1) 1932].

Other important litigations covered interstate shipments of substandard anesthetic ether, dentifrices falsely and fraudulently labeled as useful in the cure of pyorrhea, an inhalant recommended for colds and diseases of the nasal passages, an asthma and hay fever medicine and poisonous "ginger jake".

Two offenders responsible for the original manufacture and distribution of the poisonous Jamaica ginger, shipped from Boston, which caused the first outbreak of "ginger-jake" paralysis, were brought to trial under charges of conspiracy to violate the food and drugs act and the prohibition act. Members of a second group were indicted in New York City in May, 1932. In addition, criminal prosecutions under the food and drugs act against the Boston shippers and against seven other secondary interstate distributers of poisonous Jamaica ginger were brought to a conclusion, all actions resulting in fines. "The smallness of the fines imposed in these instances," says Mr. Campbell, "is illustrative of the causes which prompted the department to ask for amendments to the food and drugs act authorizing heavier penalties."

The Administration sampled and analyzed numerous lots of fruits and vegetables to detect possible presence of poisonous chemical sprays—particularly cabbage and celery shipped from Southeastern States.

Surveys of fresh and canned fish were continued and resulted in seizures of fish adulterated with parasites.

"The Administration seized 285 stocks of falsely and fraudulently labeled proprietary remedies. Prosecutions were instituted in 298 cases." Antiseptics were examined, and 39 stocks seized, and 33 consignments of misbranded dentifrices, labeled with remedial claims for pyorrhea and other oral disorders, were libeled. The quality of anesthetic ether on the market has improved, but 19 stocks which failed to meet the standards of the U. S. Pharmacopoeia were seized. A resurvey of all drugs defined in the U. S. Pharmacopoeia or National Formulary was begun, and more than 1600 samples, the output of 160 manufacturers, were collected. "In general," Mr. Campbell comments, "these products show a gratifying degree of compliance with the standards."

In administering the caustic poison act, a resurvey of the field disclosed that some manufacturers had failed to heed suggestions for labeling and six shipments were seized. Activities under the import milk act included the inspection of 84 milk plants and 465 dairy farms in Canada. Products from 12 farms were embargoed and six farms were released from previous embargoes.

OXYGEN AND CARBON DIOXIDE THERAPY*

BY MEYER SAKLAD, M.D.†

THE purpose of this paper is threefold:

a. To consider the several and varied conditions in which oxygen and carbon-dioxide, singly or in combination, are employed, coupled with a study of the underlying physiological bases thereof.

b. A consideration of the methods and techniques involved in the administration of these gases.

c. A desire to stimulate the use of the above-named agents in situations where patients' lives may be saved or made more comfortable.

The value of the administration of oxygen in concentrations above that which exists in fresh air has long been appreciated. Definite progress followed upon the favorable reports of the therapeutic use of this agent by Haldane and Metzger. Within the past ten years considerable attention has been paid to the physiology of oxygen-want and satisfactory apparatus for its administration have been devised and employed.

The only indication formerly considered for the therapeutic use of oxygen, and today its greatest single field of usefulness is anoxemia. Anoxemia literally means without oxygen. This term, however, has come to signify any decrease in the normal percentage of oxygen in the blood.

Anoxemia may occur as the result of very many conditions. A decrease in the normal oxygen content of the blood may be the result of a single factor or combination of factors.

The causes of anoxemia as listed by Waters, Wineland and Seevers[28] are as follows:

1. High metabolic rate due to fever, fear, toxemia and pain.
2. Reduced pulmonary alveolar surface due to disease or mechanical compression from position.
3. Poor oxygen carrying power of the blood.
4. Cardiac insufficiency.
5. Obstruction of respiratory tract due to:
   a. Wet lung, secretion of mucus, inhaled fluid, vomitus.
   b. Cord adduction (laryngospasm)
   d. Small ports and tubing, or poorly acting valves of anesthetic apparatus.
6. Technique. (Unwise control of gases administered.)
7. Respiratory depression.
   a. Deep ether or chloroform anesthesia.
   b. High spinal block.
   c. Central depression as with opium and derivatives of barbituric acid.

Barcroft[14] has classified the anoxemias as to type:

1. *Anoxemic Type.* Here the decrease of oxygen tension in the blood is the result of pulmonary involvement which interferes with respiratory exchange. Ex. pneumonia, asthma, severe bronchitis, etc.

2. *Stagnant Type.* This term is applied to the class of patients suffering from oxygen want due to circulatory disturbance, especially of a cardiac origin. With a lessened flow of blood to the tissues, as the result of such disturbance, oxygen is more rapidly utilized than supplied.

3. *Anemic Type.* In this type the low oxygen tension in the blood is the result of a lessened capacity of the blood to carry oxygen. This lessened capacity may be caused by a decreased number of red blood cells as in hemorrhage, or by a diminished capacity of the red blood cells to carry their normal quota of oxygen in the form of oxyhemoglobin as in carbon-monoxide poisoning.

EFFECTS OF ANOXEMIA

The effects on the body of oxygen deprivation are obviously dependent on the rapidity, extent and duration of the diminished oxygen supply.

Acute Asphyxia. When the oxygen supply is suddenly and completely shut off, by whatever cause, there sets in a rapid and deep cyanosis followed by loss of consciousness, convulsions and death.

Subacute Asphyxia. If the supply of oxygen to the patient is diminished over a longer period of time the symptoms vary depending upon the degree of reduction. One of the very first symptoms to present itself is the attempt of the respiratory mechanism to compensate for the diminution of oxygen by an increase in respiratory rate and magnitude. As the breathing increases, carbon dioxide is washed out of the lungs and this causes the hemoglobin of the blood to hold more tightly to its oxygen than is ordinarily the case, producing the so-called Bohr effect[44]. This hyperpnea is followed by a falling off in the respiratory rate and volume. Shallow, irregular breathing or Cheyne-Stokes respiration may supervene. Cyanosis may or may not be present.

The senses are interfered with; consciousness is impaired. Hearing is the last sense to be abolished before unconsciousness sets in.

The central nervous system is severely affected. Muscular incoördination and, occasionally, paralysis set in. Diminution of a normal supply of oxygen to the heart muscle, if prolonged, causes heart failure. The immediate effect of oxygen want causes a temporary though high rise in blood pressure followed soon by a

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marked drop. Kidney function is interfered with. In short, every organ of the body suffers when deprived of its normal quota of oxygen.

The late effects of severe or prolonged oxygen deprivations are many and are not so commonly appreciated. Roth[24] states, "Anoxemia is not only dangerous, but its injurious effects may soon become irreparable though the anoxemia may have been efficiently corrected." Brain tissue is extremely susceptible to a decrease in the oxygen supply of the blood. Damage done to nerve structure may be present long after the cause of the anoxemia has been removed. Nerve damage following carbon-monoxide poisoning may exhibit itself by a marked peripheral neuritis, epileptiform seizures or various degrees of partial paralysis.

EFFECTS OF COMPLETE OXYGENATION

An increase in the percentage of oxygen above normal in the inspired air causes a feeling of well-being and alertness. Perceptions are increased. Respiratory rate is diminished. Heart action is slowed. In hypertensive patients a fall in blood pressure occurs. There is a fall in body temperature in febrile patients. Hyperoxygenation has a favorable effect on the kidneys. The volume of urine secreted is increased[18, 19]. The phthalein function test is increased and blood urea reduced[17]. Oxygen therapy has a favorable effect on hyperglycemia and glycosuria[40], and causes a reduction in acetonuria[41].

OXYGEN THERAPY

A. Respiratory Diseases

a. Pneumonia

The presence of a pneumonic process in a lung decreases the functioning efficiency of that organ by diminishing normal aeration. The respiratory mechanism attempts to compensate for this deficiency by stimulating the remaining and uninvolved lung tissue. It does this by an increased rate and depth of respiration in an amount in proportion to the extent of the diseased process. An increased depth in the respiratory effort is painful to the patient because of a usually associated pleuritic process. Thus the pneumonia patient presents a picture of shallow hyperpnea. To aid and relieve the patient one has but to increase the percentage of O_2 in the inspired air. The administration of oxygen to a pneumonia patient has a sound physiological basis, particularly and especially if cyanosis exists. A comparative series[1] of cyanotic pneumonia patients treated with oxygen and those untreated showed a decrease in mortality in the former.

Evans[39] classifies pneumonia patients into three groups:

1. A very small group in whom cyanosis is never present throughout the course of the disease.

2. A group of patients in whom cyanosis is present to a moderate degree. In these patients the cyanosis disappears when the inspired air contains 40-60% of oxygen.

3. A last group in whom there exists varying degrees of residual cyanosis even after oxygen has been given at the maximum of the above dosage.

It is in this last group that Evans pleads for the administration of increasing percentages of oxygen even up to 100%, feeling that such administration is not harmful.

There is every justification for the attempt to remove and prevent cyanosis. Binger[16] points out ". . . . that there appears to be a positive correlation between anoxemia and mortality." It has also been pointed out that the ability of a patient to raise the level of oxygen saturation in the arterial blood is of prognostic significance. The surviving patients usually show a level above 90% whereas the fatal cases do so far less often.

b. Pneumonia Associated with Surgery

In spite of recent advances in the technique of the administration of anesthetic agents and an increased knowledge of the agents themselves, pulmonary complications continue to exist. Statistics[46, 47], give the frequency of such a complication between 2.5 and 3.5 per cent. There is much justification for the opinion that anesthesia induced by inhalation renders the patient more susceptible to pulmonary complications[4]. The term "Ether Pneumonia" is obsolete. The feeling exists that other factors at play are responsible, in the main, for the production of postoperative pulmonary complications.

The commonly accepted underlying factor in the production of these complications is atelectasis[5, 9]. Brunn and Brill[43] feel that atelectasis is the predominating postoperative pulmonary complication. It is generally agreed that atelectasis is the result of hypoventilation caused in turn by obstruction in the bronchioles by a plug of mucus or secretions. Air is absorbed from the alveoli beyond the point of obstruction and collapse ensues[9, 29, 45].

Henderson[13] feels that an added factor conducive to the production of atelectasis is the lowered tonicity of the diaphragm and intercostal muscles present after nearly every surgical operation.

Overholt[29] adds another and most interesting theory to the causation of atelectasis. He feels that opening of the peritoneal cavity has a direct bearing on its production. Many observers have reported that the frequency of pulmonary complications is greater following intraabdominal operations than operations in which the peritoneal cavity is not opened. There-

exists in the immediate subdiaphragmatic region a subatmospheric pressure. The relationship between the subatmospheric pressures within the peritoneal and pleural cavities allows for the normal play of the diaphragm. Opening into the peritoneal cavity allows the entrance of air and destroys the negative pressure. The still existing subatmospheric pressure within the pleural cavity pulls the diaphragm on an average, 3.5 cm. above its normal level resulting in a considerable decrease in vital capacity. Normal function of the diaphragm is interfered with, inasmuch, as it must, of necessity, contract against a positive intraperitoneal pressure instead of a negative one.

Reduction of the intrathoracic space, an incomplete diaphragmatic excursion and diminution in vital capacity followed by a narrowing of the lumen in bronchioles favor obstruction by secretions. Obstruction means atelectasis. Atelectasis plus infection is bronchopneumonia.

The prevention and treatment of hypoventilation in surgical patients have been followed by marked success in the prevention and cure of pulmonary complications. The most satisfactory way to increase ventilation is by the administration of carbon dioxide.

It has been demonstrated[3] that:

1. Atelectasis that is induced experimentally by blocking a bronchus is quickly cleared up and the lung redistended by the deep breathing induced by inhalation of carbon dioxide in proper dilution.
2. Pneumonia that is induced in dogs by insufflation of a virulent culture of pneumococci is generally overcome, the lung redistended and the animal restored to health by inhalation of carbon dioxide sufficient to cause deep breathing and continued until the pneumonia area is cleared.

Clinical results substantiate this. Judd and Passalacqua[18] report highly satisfactory findings. They administered oxygen in 180 unselected cases under one of three sets of circumstances:

1. As a prophylactic measure against pneumonia immediately after the operation.
2. As soon as the signs and symptoms of pulmonary congestion were recognized clinically.
3. After the classic signs of pneumonia were present.

In the first group there were 105 patients in whom pneumonia did not occur. In the second there were 43 patients with pulmonary congestion who did not develop pneumonia. In the last group were 32 patients with pneumonia. No deaths occurred and the progress of the disease was apparently influenced by the use of oxygen.

The greatest amount of success in the therapy of pneumonia with carbon dioxide and oxygen can be achieved only by the institution of gaseous administration as early as possible. Anesthetists appreciate the significance and value of such therapy. The administration of carbon dioxide is becoming a routine procedure immediately after every type of inhalation anesthesia. Such administration should not be limited to the inhalation agents. The employment of spinal anesthesia and the use of the barbiturates and avertin are associated with some degree of respiratory depression and here, too, the administration of carbon dioxide is indicated. Patients, with any pulmonary disease that decreases the lung volume, or with anoxemia, may be relieved by the addition of carbon dioxide and oxygen to the inspired air. Oxygen therapy has been of value in such conditions as massive pulmonary collapse, pulmonary embolism[6], pulmonary edema, bronchitis[48], asthma and emphysema[48].

B. Circulatory Disease

The effect of oxygen on blood pressure is usually dependent upon the pathological processes underlying an abnormal blood pressure. Hyperoxygenation in a patient suffering from exhaustion, exposure, or anesthetic overdosage is usually followed by a rise in blood pressure. Administration of high concentrations of oxygen to the arteriosclerotic, hypertensive or severe nephritic patient lowers the blood pressure.

Inhalation therapy is of value in the treatment of cardiac diseases. Barach and Richards[42] report good results in the treatment of congestive cardiac failure with arterial anoxemia. In a few cases the patient experienced marked diuresis and disappearance of edema. The edema in these patients returned when the oxygen therapy was discontinued and again disappeared when the oxygen therapy was reinstituted.

Keefer and Remick have recently sought to show that angina pectoris is due to an anoxemia of the heart. Levy and Barach[32] feel that anoxemia may play a crucial rôle in determining the outcome after coronary thrombosis. Employment of oxygen therapy may aid in maintaining an adequate circulation until the heart has had an opportunity to recover from its acute functional disturbance. Studies and favorable results are reported[49, 50].

C. Diabetes

Inhalational therapy is reported of value in the treatment of diabetes. Associated with oxygen inhalation there occurs a favorable effect on the blood sugar, glycosuria, and acetonuria[7, 40, 41].

D. Mental Diseases

Leake et al.[11] report the results of their experiences with inhalation therapy in mental diseases. Inhalation of 20-30% carbon dioxide in an atmosphere of oxygen for short periods of time was followed in the majority of instances by an amazing period of lucidity during which

the patients who otherwise were mute and inaccessible were able to converse coherently and with intelligence. After from two to twenty-five minutes the patients relapsed to their conditions previous to the administration of the gas. An explanation of the mechanism of this response is offered on the basis of Lovenhart's theory of the relation between the functional activity of cells and oxidative metabolism within them. Murphey[36] reports satisfactory results in the treatment of epilepsy by oxygen therapy employing both the respiratory and intravenous routes.

E. Poisoning

Poisoning by any agent which interferes with respiratory efficiency in any way should include, in its method of treatment, oxygen therapy. Agents which depress respiration by central action and agents which are eliminated by respiration should be treated by carbon dioxide inhalation. Morphine is a powerful respiratory depressant and causes a definite decrease in oxygen consumption[19]. Strychnine, alcohol, ether, chloroform, and carbon monoxide can all cause death by anoxemia. The administration of carbon dioxide and oxygen is an all-important therapeutic method of tremendous value[5, 13, 51, 52, 53].

F. Anesthesia and Surgery

The ideal anesthesia is one in which the patient, at no time, suffers from tissue suboxidation. The administration of the anesthetic agents of today expose every patient to the possibility, at some time, of some degree of insufficient oxygen to parenchymatous structures. The two most serious offenders in this regard are nitrous oxide and ethylene. The administration of ether, spinal, regional, barbiturate or avertin anesthesia, may expose the patient to like danger, but in these, adequate prevention of anoxemia may be accomplished by the associated administration of oxygen plus carbon dioxide directly to the cone or oral cavity, without interfering with depth or extent of anesthesia.

The induction of ether may be more rapidly terminated by the administration of carbon dioxide directly to the ether cone. This makes for a smoother induction and diminishes both the degree and extent of the excitement period. Smoother maintenance of the patient is associated with continuous administration of oxygen. Patients may be carried more lightly throughout a surgical procedure particularly in intraäbdominal surgery, since with the aid of carbon dioxide it is possible more rapidly to induce the deeper level of anesthesia necessary for peritoneal closure.

With closure of the peritoneal cavity, deëtherization may be instituted. Ether is removed and a mixture of 10% carbon dioxide in oxygen is delivered directly either to the empty cone or the patient's oral cavity. By stimulating breathing and hyperventilation, the period of anesthesia convalescence, nausea and vomiting is diminished.

The use of oxygen in anesthesia has led McKesson[35] to describe a test for anesthetic depression. Flooding a patient with high concentrations of oxygen for a short interval and study of the blood pressure and pulse rate reaction enable one to detect and differentiate the depression due to anesthesia and that due to surgical trauma. This offers the anesthetist a better guide to the efficiency of the anesthesia or may enable him to institute treatment for collapse before other and more serious manifestations present themselves. Administration of high percentages of oxygen to the patient may often aid in demonstrating the presence or absence of circulation in a loop of bowel when freed after strangulation. Coöperation between surgeon and anesthetist in such conditions is helpful in determining the correct procedure to be followed.

The return of the patient to bed following operation does not mean that the dangers of anoxemia have passed. The causes of anoxemia following anesthesia or surgery are many and, as listed by Evans[54], are as follows:

1. In the upper respiratory passages, relaxed tongue, epiglottis over glottis, mucus, blood, pus, foreign bodies, edema or spasm of the vocal cords, collapsed trachea or too tight neck bandages.

2. In the chest, collapse of the lung, pneumonia, asthma, bronchitis, edema, pulmonary embolism, pleurisy with effusion or cardiac pathology.

3. In the abdominal cavity, anything that impedes heart action or that interferes with the descent of the diaphragm, such as ascites, tumors, dilatation of the stomach or intestines or upper abdominal operations.

4. In the cardiovascular system, severe hemorrhage, decompensating heart, embolism or ruptured cerebral vessel.

5. In the nervous system, meningitis, paralysis of the nerves supplying the diaphragm and other respiratory muscles or the depressing effect of morphine, ether or chloroform on the respiratory center.

The use of oxygen in any of the above conditions, plus carbon dioxide when indicated, is of extreme value and may be a life-saving procedure.

Oxygen therapy finds a place of value in the postoperative phases of surgical diseases. The sequelae of thyroidectomy, hyperpyrexia, hyperpnea and high pulse rate treated with high concentrations of oxygen by inhalation result in more comfort to the patient and increase the chances for a more favorable end result[54, 55, 56, 17].

Complicating factors in surgery as hiccough[57, 58], pulmonary embolism[17], hemorrhage[17], and pneumonia as previously stated indicate inhalation therapy.

G. *Obstetrics*

The increase in the administration and dosage of sedative, narcotic and anesthetic agents in obstetrics must be considered as a factor in the possible production of respiratory depression in either mother or child. Waters[26] and Trusler et al[27] recognize that not only is there a respiratory depression in the mother but that the fetal respiratory center is likely to be depressed at birth due to narcosis, anoxemia and trauma. Under such circumstances[26] more than normal carbon dioxide tension must be maintained in the blood of both mother and child if a normal response of the newborn respiratory mechanism is to be expected when contact with the mother's circulation is severed.

Waters[26] feels that the fetal heart rate is a good index of the extent of anoxemia present in the fetus. By means of a large diaphragm type stethoscope measuring 5½" in diameter and weighing 200 gm. and retained by adhesive tape, the anesthetist follows and charts the fetal heart rate along with the pulse rate and blood pressure of the mother. Waters discovered that occasionally the heart rate of the fetus falls during the height of the contraction. By flooding the mother with a high percentage of oxygen in the interim between pains this decrease in fetal rate will not be noticed. He concludes that "The excess in the oxygen administered to the mother during the relaxed phase of the uterus will usually sufficiently build up the oxygen content of the fetal blood so that any interruption of oxygen delivery by way of the cord during uterine contractions will not be noticeable."

H. *Oxygen Therapy in the Newborn*

Henderson[62], in a recent statistical study concludes that combined stillbirth and neonatal deaths due to respiratory complications amount to nearly eight per hundred births, that is, to more than 150,000 deaths a year in this country alone. A reduction in this appallingly high death rate can only follow upon an investigation of the underlying conditions and institution of the most advanced treatment at our command.

The lung of the newborn child, before the first inspiration, is airless, does not crepitate and the alveoli are collapsed[59]. The lungs are atelectatic, similar to the condition which is often produced in the adult when the alveolar air is absorbed by the blood in the alveolar capillaries following bronchial obstruction. Pulmonary capacity is small during the first few hours and seldom exceeds 30-50 cc.[62, 63].

Pulmonary expansion is gradual and may not be complete for several days. Occasionally large atelectatic areas persist over long periods of time. These atelectatic areas suffer from deficient circulation and predispose to pneumonic processes.

The treatment of pulmonary conditions in the newborn are directed at three angles[13].

a. Treatment of asphyxia.
b. Treatment of continuing atelectatic processes.
c. Treatment of pneumonia in the newborn.

a. Asphyxia

Coryllos[59] feels that the old methods of swinging, spanking, and chilling of asphyxiated babies are imperfect and unscientific and generally do more harm than good. He feels also that manual artificial respiration should be completely discarded. Of these imperfect methods he holds mouth to mouth insufflation to be the most rational. He presents, however, the great danger of rupture of the alveoli, a complication generally fatal.

Treatment of asphyxia neonatorum should be limited to one of the three following methods:

1. Inhalation of a mixture of 6-10% carbon dioxide in oxygen as proposed by Henderson and Haggard.
2. Intratracheal suction and insufflation, with the same mixture, as proposed by Flagg.
3. Mechanical prolonged passive artificial respiration devoid of the dangers of manual artificial respiration by using differential negative pressure obtained in the respirator of Drinker and Shaw.

Coryllos feels that the first two of these methods have a great advantage over the third in that they employ carbon dioxide.

It is important to administer carbon dioxide to the newborn with respiratory depression. This gas constitutes an absolute physiological necessity. Formerly there was a good deal of opposition to the administration of carbon dioxide in these cases. The feeling prevailed that carbon dioxide was contraindicated inasmuch as the poorly breathing patient was abundantly supplied with carbon dioxide of his own manufacture.

It is not the mere percentage of carbon dioxide in the blood stream that acts as a respiratory stimulant. The blood reaction is the important factor. It is true that the amount of carbon dioxide in these cases mounts rapidly, but in cases of prolonged respiratory deficiency there is an increase in the alkali of the blood to compensate for the acidosis. Thus we have a patient who has become adjusted to the high percentage of carbon dioxide. Since carbon dioxide is more than thirty times as diffusible as oxygen, hyperventilation will wash out the carbon dioxide much more rapidly than the changed blood reaction can accommodate itself. The patient then presents an alkalosis to which the respiratory center responds by apnea. To

prevent such a train of events it is important that a comparatively large percentage of the inspired gas should be carbon dioxide.

The mode of treatment would be dependent upon the extent and type of asphyxia present. In cases of slight asphyxia the method of Henderson and Haggard should be employed because of its ease. It consists of the administration of a mixture of 6-10% carbon dioxide in oxygen through a bag to the inhaler over the baby's mouth and nose. It is sometimes necessary to use slight pressure on the bag.

In cases of advanced asphyxia Corylloss[20] prefers the method of Flagg[20]. This method consists of direct laryngoscopy, suction of the mucus that may be present in the pharynx, glottis or trachea, insertion of an intratracheal catheter and insufflation of a carbon dioxide oxygen mixture under pressure of 15-20 mm. of mercury (7½"-10" of water). This treatment should be continued until such time as respiration is reëstablished or until final cardiac failure occurs. This is the only method which considers the all-important factor of patency of the tracheobronchial tree.

The method of prolonged passive artificial respiration as devised by Drinker and Shaw consists of the use of a respirator whereby negative pressure is created with the production of rather satisfactory inspiratory efforts. This method may be indicated in asphyxia due to toxic inhibition of the respiratory center by morphine, barbiturates or other narcotic agents. The method as originally devised neglected the true fundamentals necessary for successful resuscitation, first, patency of the tracheobronchial tree and secondly, the presence of carbon dioxide in high concentration in the inspired air. These latter essentials can be readily added to the above method. The child may be intubed, placed in the respirator and the catheter joined to a system containing carbon dioxide and oxygen in sufficient concentration.

b. Treatment of Continuing Partial Atelectasis

For every child that fails to breath initially there are several that succumb to secondary asphyxia because they fail to inflate their lungs adequately. They suffer from varying degrees of atelectasis. These atelectatic areas can be readily cleared up by carbon dioxide therapy. Henderson[21] advises the administration of this agent not only to the asphyxiated but to all normal children as well. This inhalation should be given several times a day for five or ten minutes for several days.

c. Treatment of Pneumonia

Atelectatic areas as previously stated in this paper are areas which are readily susceptible to infection and are the foci for bronchopneumonia. Here, too, inhalation therapy is indicated.

METHODS

The types of apparatus and methods of administration are many. Choice of the method should be dependent on the indication. The oxygen chamber is claimed as the best method for administering high percentages of oxygen[9]. Tents vary as to design and mode of operation. Their greatest drawback is that carbon dioxide diffuses rapidly through the fabric. The administration of carbon dioxide or oxygen by nasal catheter is usually sufficient when indicated. It is claimed[21] that the administration of oxygen intratracheally will oxygenate the blood whether or not the patient makes respiratory movements. A simple and rapid way to administer carbon dioxide has been suggested in the treatment of hiccoughs by rebreathing into a paper bag. The administration of oxygen subcutaneously, with satisfactory results and no bad effects, has been reported[10, 12, 22, 37].

DANGERS

Because of the high percentages of oxygen employed, the danger of fire is ever-present. Though oxygen is not combustible, in the presence of high percentages many agents become extremely inflammable and a spark may start a severe fire.

In closed systems as in oxygen tents the patient depends entirely on the oxygen coming from the tank. If the tank were to become emptied and if it were not quickly replaced or if there developed an obstruction in the delivery tube, serious results might follow.

CONCLUSIONS

The dangers of tissue suboxidation and the importance of its relief are recognized and accepted. Oxygen therapy is indicated in any general or local, acute or chronic anoxemia from any cause and in any degree of intensity. Every hospital should supply itself with sufficient equipment to carry out any form of oxygen therapy. Carbon dioxide is an important adjunct and has its special fields of usefulness. The dosage, type and duration of administration should be controlled by one who is well acquainted with the significance and symptomatology of anoxemia.

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THE RECOMMENDATIONS OF THE COMMITTEE ON THE COSTS OF MEDICAL CARE*

BY C.-E. A. WINSLOW, DR.PH.†

At a meeting held under the auspices of New York University two weeks ago, a group of distinguished publicists assembled in New York to discuss the function of the university in this changing world. There were differences of opinion as to the part the university should play but very little difference as to the fundamental problem involved. It was stated again and again in different forms by various speakers to be the development of ordered social controls in a democratic world. None of the speakers advocated the discarding of the basic system of individual competition which lies at the heart of the civilizations of Europe and America. All agreed, however, that this system must be animated by a new spirit of social planning and many speakers brought out the need for an intensive study of problems of government and finance and social organization to form the basis for such social planning.

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Now, through this discussion I was struck by the fact that, in the field of medical care, we were perhaps five years ahead of other areas of human endeavor in visualizing and attacking this vital task. It was on May 17, 1927, that a group of some sixty representative physicians, health officers, social scientists and representatives of the public met to create the Committee on the Costs of Medical Care.

We were extremely fortunate in securing as the leader of this Committee, Dr. Wilbur, then the president of Leland-Stanford University, who, in spite of the tremendous demands that have come upon his time since his call to Washington, has always and at every moment been ready to give his time, energy and leadership to the Committee, and whose intellectual and moral courage has been ready to face every issue that came up in the Committee's investigation.

It was Mr. Harry H. Moore, who from and before the beginning was the inspiration of this movement, and who, as director of studies, has actually had the direct responsibility for the work. Through the generosity of eight of the great social foundations and with the aid of other special grants, a generous budget was provided, a remarkably brilliant staff was gathered together, and a series of twenty-six special studies of a factual nature were completed and most of them already published. For the past year and a half the Committee has been at work in formulating the recommendations presented to you in printed form today and, on October 31 last, the report of the Committee was adopted by a vote of three-fourths of the committee membership, only thirteen members out of forty-eight dissenting for one reason or another.

Perhaps the primary objective which led to the formation of the Committee was the widespread feeling that the costs of medical care constituted a serious economic burden upon the community. What are the actual facts as disclosed by the Committee's studies? "Let's look at the record", as a famous citizen of New York state has so often said.

Our studies show that the total cost of all forms of medical care, including hospitalization, physicians' services, dentists' services, nursing services, drugs and medicines, public health services and all other incidental factors is approximately $3,650,000,000 or about $30 per capita per year. This total includes certain items that could be reduced to advantage, particularly the $700,000,000 now spent for drugs and medicines, three-fourths of which is almost certainly unnecessary, and a considerable proportion positively harmful. On the whole, however, the expenditure of four per cent of the total national money income for health protection and the care of illness does not seem in any sense excessive.

The real difficulty, however, as our studies show, is that average figures give very little idea of the actual problem that is involved. While the average money income of the country in 1928 was approximately $750 per capita, 50 per cent of the population even in that prosperous year had an income of less than $500 per capita. Family incomes are very unevenly distributed; and the costs of medical care are even more variable in their incidence. Perhaps the most striking single fact brought out by our studies is the fact that in the group of families with a family income under $1200 per annum, one per cent of the families spent in a given year $500 or more for medical care. Results are not very different in the higher income groups. All along the line, one family in a hundred in each year must spend from a quarter to a half its annual income as the result of the emergency of sickness and it is this hundredth family which creates the serious problem of the costs of medical care.

The evils which result from such uneven distribution are many and diverse. On the one hand, the persons and agencies furnishing care find their financial status insecure and unsatisfactory. The average income of physicians in 1929 was $5300. One-third of the practicing physicians of the country had incomes of less than $2500. Our hospitals are struggling under burdens which at the present moment in many communities seem almost unsurmountable. The patient, on the other hand, has often the choice between incurring expense which will cripple his budget for a decade, resorting to the charity of public agencies or individual physicians, or going without the medical care he needs. Too often the last alternative is selected. It is a common catchword that only the very rich and the very poor have good medical care, but half of this catchword is untrue. We find that in the group of families with an income of $10,000 and over, the actual care received is indeed reasonably adequate. Compared with what we believe to be sound and reasonable standards, such families receive 84 per cent of the physicians' calls which they need in home, office or clinic and 87 per cent of the hospitalization they require, but even in this group only 62 per cent of the dental care desirable. As we pass down the scale of incomes we find medical services progressively less,—except that for hospitalization the very poor are somewhat better off than those just above them in the economic scale. The group of families with incomes under $1200 receive only 34 per cent of the physicians' calls they need, only 67 per cent of the days of hospital care and only 12 per cent of the necessary dental attention. All along the line the lack of use of preventive procedures is appalling. "Preventive medicine" is still a pious aspiration and not a realized fact.

This is the basic problem. Its answer is so

obvious as to be almost a truism. The United States has today very nearly the number of doctors, nurses, and hospital beds which would be necessary for complete adequate care for all the people. It is spending today nearly enough, if the expenditure were properly distributed and the service properly organized, to provide such adequate care. We estimate that $36 a year per capita instead of $30 as an average figure would provide really complete preventive service and curative care for all the people of this country. The sum is within our means and the problem is simply a problem of distribution. Sickness is an emergency and we know quite well in other fields how to provide for emergencies. We insure against fire hazards and automobile accidents. The problem of the costs of medical care could be fully and completely solved by an application of the same principle and this is why the Committee "recommends that the costs of medical care be placed on a group payment basis, through the use of insurance, or of taxation, or through the use of both these methods". The money now actually spent with a slight increase, representing less than five per cent of the national money income,—would meet the problem if the burden were distributed by spreading costs over a period of time and over groups of families. It would still be essential as at present for the more fortunate to bear the burden of those families who subsist on a very low economic level but the development by a properly designed system of group purchase would of course greatly increase the proportion of families able to bear their own share without discomfort.

The Committee approached its problem primarily from an economic angle, but from the first it realized that you cannot consider costs without considering quality as well. It laid down as its objective the oft-quoted aim of Dr. Olin West, "The delivery of adequate scientific medical service to all the people, rich and poor." When it became clear that group purchase offered the only answer to the economic problems, the question of quality was accentuated in importance. If you were to ask groups of individuals to contribute to a common fund for the purchase of medical care, you must give them some guarantee that the medical care is the best that can be obtained for the money spent and our survey of the field made it obvious that, in all fields of service, the medical care now obtained by the American people would not meet these qualifications. Good medical care must center first of all about the service rendered to the individual by a family physician, knowing that family intimately and considering the health problems of its individuals from a standpoint of broad knowledge and individual experience. This type of family service is becoming more and more rare, and there is not only waste but actual harm to health involved in the peregrinations of the patient from one specialist to another in our large cities. We agree, all of us, very fully with the need for rehabilitating the private practitioner, so far as possible, but we also realize that that cannot be done by talking about it. The only way it can be done is through the development of some form of organization which will encourage the use of the family practitioner. But, of course, the family practitioner alone cannot meet the needs of modern medical science. The days of what Dr. Wilbur has called "saddle-bag medicine" are past. Fifty years ago the country doctor could carry in his head about all that was known of medical science and in his little black bag all that was needed for its application in a large proportion of cases. Today we must have specialists available for consultation, and specialists of many kinds. We must have laboratory services, technical assistants, and many devices for the application of physiotherapy.

All these things we must be prepared to provide if we are to ask the public or large sections of the public to contribute to an insurance fund for the costs of medical care. We must offer more. We must offer something in the nature of a guarantee of the quality of service. The public has become profoundly and justly skeptical of the traditional idea that a doctor is a doctor and a hospital a hospital. It knows that physicians differ in innate capacity, in education, in attitudes toward their professional work. It wants to know not merely where to find a doctor, but where to find a good doctor who will represent the best service available from the standpoint of modern medicine; and there is no way of obtaining such a guarantee at present.

Finally we must assure our prospective group purchasers of economy and efficiency in organization and such economy and efficiency is woefully lacking today. There is waste in overhead costs, waste in the idleness of the practitioner whose time is not fully utilized, particularly during the first precious years after graduation; there is waste in the economic pressure upon specialists to do work that others less competent could perform exactly as well as they.

These criticisms are by no means novel. They have been advanced on many sides and we have found innumerable experiments in organizing medical practice designed to provide more adequate and more economical service. We find many industries furnishing complete medical care to their employees and the families of those employees at costs ranging from $10-$20 per capita per year and of a quality superior to that rendered in the same areas under the traditional plan of individualistic practice. In one of these industrial services we estimate that medical care which actually cost $71,000 would

have cost over $175,000 at current local rates. We have found groups of university students in our larger universities receiving under an organized program perhaps the most complete form of medical care, preventive and curative, enjoyed by any considerable group of persons anywhere in the world. We have found an army post at Fort Benning, Georgia, spending $30 per capita for a service which in most respects seems ideal in quality. The inevitable logic of the situation and the study of such experiments as have been described have led the Committee to its second major recommendation, "That medical service, both preventive and therapeutic, should be furnished largely by organized groups of physicians, dentists, nurses, pharmacists, and other associated personnel. Such groups should be organized, preferably around the hospital, for rendering complete home, office, and hospital care."

The organization which we ultimately visualize as ideal for an urban community is a medical center organized somewhat under the plan of our present voluntary hospitals. It should have a board of trustees, as these hospitals do, representing the wide public interests involved for the general administration of the funds which the community must provide. All technical problems, however, should be decided, as they are in the present voluntary hospitals, by the professional staff.

In this combination of the community interests and the practitioner's interests, as developed in the best American voluntary hospitals, we have found, I think, the key to our problem. I remember in the early days of the Committee some members of the staff said, "We don't want to bother too much about what has happened in Europe. We want an American plan." Gradually, as the thing began to develop, we found we had an American plan, because the voluntary hospital is so characteristic of an American institution. It is not simply a question of a physician and his patients; there are also community interests involved. The community must in general put up the capital. There are professional interests involved, and in the proper balance between those two interests lies the answer.

The family physician should be the central figure in this plan and the family under the care of the medical center would be directly in charge of the general practitioner of its choice belonging to its staff. In this way, so far as I see, and in this way alone can the family practitioner be restored to his real function and place in the scheme of things.

In such a plan, is found the proper coördination of the family physician with the specialist, adequacy and economy in overhead and operating costs and reasonable guarantee of quality. Quality of service, we believe, in a professional field can be guaranteed only by the profession itself. I have no faith at all in schemes for licensing specialists under the State. I think that would make confusion worse confounded; but such guarantee can come only from the profession organized on a basis which insures leadership by the ablest and most progressive members. In the type of organization, possible in a well-organized hospital, lies the only sound guarantee of quality.

In relation to such a highly organized medical center could be grouped smaller hospitals for semi-urban and rural areas with branch clinics and ambulance service in still more remote regions. In the rural areas, so far as we can see, the only possible source of funds for such a program must be sought in the tax levy. But wherever the funds come from, the rural services should be coördinated and knit in with the medical center so that the rural doctor may have his chance to practice medicine according to modern standards. The whole system should be guided and controlled by coördinated committees in the city, town, county and state, on which the professions involved, the health authorities and the public should be adequately represented.

In these two principles then, of group service and group payment lies, it seems to us, the answer to our problem; and it remains to consider the method of bringing these principles into operation. So far as the organization of the service is concerned the Committee believes that the answer lies in general (aside from the remote rural areas), not in state medicine or the employment of physicians by the community, but in the development of that most characteristic institution, the voluntary hospital. The combination of a governing board representing the interests of the community and a professional staff with complete freedom of professional action seems to us to offer an ideal solution of the problem of group practice.

The problem of group payment is a somewhat different one. It would logically seem that, where so simple a matter as the collection of funds is concerned, a problem in which the only desiderata are universality and stability, the state would be the logical agency to undertake the task. This is of course the conclusion that has been reached by practically all European countries in one form or another. The Committee is nearly unanimous in recognizing that complete coverage of all the people who require care can only be attained by some system of compulsory insurance. Most of us, I think, believe that such a system must ultimately come and when it does come we want insurance for medical care to be sharply and completely separated from insurance covering the wage loss due to illness, as we feel that the difficulties experienced in many European countries have been largely due to the combination of these

two different objectives. The majority of the Committee is, however, not prepared to urge compulsory insurance at this time and its principal reason for this conclusion has been already suggested in what has been said in regard to quality of service. We do not believe that adequate medical care can ever be provided by private physicians operating on a purely individualistic basis, and if the introduction of compulsory insurance crystallized and fortified the present system of medical practice, we believe that the dangers would outweigh the benefits. We should like, therefore, to see a period of experimentation with voluntary group purchase going hand in hand with the development of group practice so that when compulsion comes the public can contract with well-organized and well-established medical centers and their coöperating agencies. We can begin with industrial groups, church groups, neighborhood groups and other voluntary aggregations, while we are gaining experience in medical organization and in actuarial practice; and that this is not an idle dream is shown by experience in England, where something like six million people are now insured for hospital care in voluntary groups.

We have, therefore, no simple panacea which will at once and at a stroke solve the problem of the costs of medical care. We have, we believe, suggested the two principles of group practice and group purchase which will make its solution possible. We recommend in the first place "That the study, evaluation, and coördination of medical service be considered important functions for each state and local community, that agencies be formed to exercise these functions, and that the coördination of rural with urban services receive special attention." We urge the development of medical centers of the type described wherever conditions may be favorable for their establishment. In many instances the ends desired may be obtained by the expansion of an existing well-organized hospital to include home as well as dispensary and hospital care on a fixed payment basis. In other instances an industrial medical service or a university medical service may be expanded and developed to meet wider needs. We have suggested in our report many more limited developments tending toward the same ultimate goal. Our progress must be experimental and conservative and it must be intimately adapted to local needs and local facilities. If the goal is held clearly in sight, there can be no question of the ability and the ingenuity of the American people in devising means toward so essential a social end.

We have laid before you, then, principles and a program rather than a ready-made solution. We believe the principles and the program to be sound. We think that they conserve and reënforce all that is best in medical practice in the past and introduce the coöperative social planning which is so essential for the future. No country of Europe ever had such a plan. Country after country plunged into far-reaching experiments in social insurance without preliminary investigation and in most instances against the vehement opposition of the medical profession. I have no doubt that you will see this report that we are presenting to you today dubbed as Communism and Socialism, as inciting to revolution, but if that is the only response made by the medical profession, exactly what has happened in European countries will happen here. It has been, from the beginning, the hope of the Committee on the Costs of Medical Care that the coöperation in its deliberations of all interests involved and the high degree of unanimity reached in its conclusions may pave the way for a sounder progress in the United States, a progress in which the medical and other professions involved and the public as a whole may join hands so that the beneficent resources of modern medicine may at last become effective for all the people in our land.

LUMINAL IN CONTROLLING THE RESTLESSNESS FROM SODIUM AMYTAL IN OBSTETRICS*

(Review of 39 Cases)

BY NICHOLAS S. SCARCELLO, M.D.†

INTRODUCTION

ON reviewing the recent literature it will be found that the relief of pain during labor has received widespread consideration. Of late sodium amytal[1] has come into prominence, in addition to the older methods, such as the relief by "Twilight sleep", Gwathmey anesthesia[2], avertin[3], nitrous oxide[4]. Sodium amytal has been used in combination with morphine, scopolamine or both[6].

The advantages and disadvantages of these methods have been well reviewed. Robbins[7], and others found that the most serious objection to the use of sodium amytal was the difficulty encountered in controlling the patients who became very restless, while Hamblen and Hamblin[8], in summing up their work, say, "Restlessness is probably the greatest drawback to the

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use of sodium amytal in labor and apparently occurs in the majority of the cases."

The author has experienced the same difficulty and has had patients who became so restless that two nurses had to be constantly present to watch the patient.

Previous to the general use of sodium amytal, luminal, as well as its sodium salt, had been used by the previous workers at this clinic in doses as high as 15 grains with fairly good results. At times good hypnotic as well as analgesic effects were obtained. Though not having the deep hypnotic and amnesic action of the sodium amytal, the luminal did have a very marked sedative action, as well as some analgesic effect.

Therefore, with this in mind, it was decided to try the use of luminal in combination with sodium amytal in order to counteract the restlessness produced by the latter.

PHARMACOLOGY

The pharmacology and chemistry of sodium amytal[10] have been well and thoroughly reviewed of late; that of luminal not quite so extensively. According to Lundy and Osterberg[9], "Luminal has been used frequently and principally for its sedative action and less often for its hypnotic action." Gruber and his associates[11], in a preliminary report stated the following: "1. Phenylethyl barbituric acid decreased the arterial blood pressure in 85% of the cases of hypertension in which it was used. 2. There probably is no harmful effect on renal tissues or decrease in excretion of phenolsulphonephthalein when the drug is used in moderate doses. 3. Marked toxic symptoms are produced when large doses are used."

However, in regard to the toxic effect of luminal, McNerthney[12] reports a case where a woman accidentally took 75 grains without any noticeable immediate or after toxic effects.

The dosage which may be given is disputed. Whalen and Scheidegger[13] say, "The lethal dose for man is unknown; though there is a factor of individual susceptibility, which is best determined by changes in color, pulse, blood pressure, and respiration. Age, strength, and individual susceptibility are more important than body weight in determining the dosage. These authors, and others[14], have been using 20 to 30 grains before surgery, with good results and no after-effects."

Occasionally a cutaneous eruption not unlike that of measles or urticaria has appeared, but quickly disappears spontaneously on discontinuing the drug. This usually appears in individuals who have an idiosyncrasy to this drug. The author has seen only one in his series of cases.

Although the chief action of luminal is as a sedative, Lundy[15] reports that it has been used at the Mayo Clinic for several years as a hypnotic. His report is on the use of the U. S. P. preparation of pheno-barbital.

In searching through the literature no mention is found of the use of luminal in obstetrics except by McDonald[16] who has used it in the first part of the first stage of labor, while the patient is at home, prior to hospitalization. He says, "Relief is thereby obtained to tide over the home period."

The difficulty encountered was in getting the patients in the first stage of labor so that the drug could exert its maximum effect before delivery. In order to do this, primiparous patients were selected. The difficulty here is that these patients, having no obstetrical background, were of very little help in obtaining information regarding the severity of the pains, before and after the drug was given. As Collier[17] so aptly describes it, "Therefore, the cases in which I recommend the use of sodium amytal with the most enthusiasm, are the multiparae, for they have, in every case, proved very appreciative. But women who have not previously undergone the excruciation of unaided delivery, having no background for comparison, fail to appreciate any aid with the gratitude shown by one who is already a mother."

This series of cases consists chiefly of those patients who were seen in the early part of the first stage of labor, and in whom, when the drug was given, it had enough time to exert its maximum action. An attempt was made to exclude those cases in which delivery took place before the drug had time to act.

CLINICAL DATA

The procedure used was as follows: As soon as the gravida was found to be in active labor, the cervix one to two fingers dilated, and partial or total effacement having taken place, the patient would receive the initial dose by mouth. The progress of labor was determined and followed up by rectal examinations. Vaginal examinations were never done unless definitely indicated.

The initial dose of the drug varied with the individual reaction to the pains. When the patient appeared to be of the nervous and easily excitable type, or one who fussed over very slight contractions, the dose would be much larger. It was found, after trying various amounts, that a good initial dose was to give six grains of each, and more to be given as the progress of labor indicated.

Usually this amount of luminal was enough to control the restlessness which would have been present in most cases had sodium amytal been used alone.

When sedation did not take place within forty-five minutes to an hour after the initial dose, further medication was indicated and given. The

TABLE NO. 1

No.	Name	Parity	Age	Length of Labor	Amount of Drug Given in Grains	Dilatation of Cervix	Time before Delivery	Toxic Reactions	Restlessness	Coöperative	Amnesia	Remarks
1	M. H.	1	17	14 hrs. 17 min.	1. Dose Lumin. —3 Amyt. —6 2. Lumin. —6	1. 1 F. 2. 3 F.	1. 5 hrs. 2. 3 hrs.	0	Marked	No	Good	Patient was very restless and uncoöperative, though when questioned 24 hours after delivery she could not remember what had taken place after the drugs had been administered.
2	E. D.	1	20	13 hrs. 15 min.	1. Lumin. —6 Amyt. —9 2. Lumin. —3	1. 1 F. 2. 3 F.	1. 3 hrs. 2. 2 hrs.	0	0	Yes	Good	Patient became very quiet after the drug was given, slept through the pains. At the delivery although the patient appeared to be in a deep sleep, she did not coöperate, and 24 hours after delivery patient could not recall anything that had taken place.
3	J. M.	1	21	11 hrs. 20 min.	1. Lumin. —6 Amyt. —9	1. 3 F.	1. 2 hrs.	0	0	Yes	Good	Patient very quiet and coöperative, with very good amnesia. She had a low forceps delivery, at delivery she began to bleed and following delivery she went into shock. Diagnosis: Premature separation.
4	R. M.	1	24	15 hrs. 24 min.	1. Lumin. —9 Amyt. —6 2. Amyt. —3	1. 2 F. 2. 3¼ F.	1. 27 hrs. 2. 25 hrs.	0	0	Yes	Good	Toxic patient, induced labor, and that is the reason the drugs were given before labor had begun. When active labor took place patient was already under the influence of the drugs. She could not recall having had any labor pains or what had transpired following the bagging.
5	R. D.	1	22	17 hrs. 25 min.	1. Lumin. —3 Amyt. —3	1. 3 F.	1. 3 hrs.	0	0	Yes	Good	This patient fell asleep shortly after receiving the drugs. Although the amount of drugs given was small, the patient had enough to give her complete amnesia. Besides she was quiet and coöperative.
6	D. S.	1	21	11 hrs. 45 min.	1. Lumin. —10 2. Lumin. —5 Amyt. —6	1. 1 F. 2. 2/3rd	1. 8 hrs. 2. 3½ hrs.	0	Moder.	Yes	Good	No restlessness up until the last hour of the first stage, when she then, though asleep, became restless with contractions, quiet in between pains. However, she was very coöperative. Had good amnesia.
7	M. B.	1	22	26 hrs. 45 min.	1. Lumin. —9 Amyt. —6 2. Lumin. —3	1. 3 F. 2. 3/4	Toxic rash 12 hours after delivery	0	Yes	Good		Could not remember anything that occurred up until she was moved to the delivery room, and then remembered only that she was given ether. Did not know she had delivered until told by another patient.

TABLE NO. 1 (*Continued*)

No.	Name	Parity	Age	Length of Labor	Amount of Drug Given in Grains	Dilatation of Cervix	Time before Delivery	Toxic Reactions	Restlessness	Coöperative	Amnesia	Remarks
8	E. S.	1	18	7 hrs. 45 min.	1. Lumin. —6 Amyt. —3 2. Lumin. —3	1. 2½ F. 2. 3½ F.	1. 3 hrs.	0	Marked	No	Good	Very restless with and in between pains, no coöperation. Questioned the next morning she could not remember anything that had taken place after taking the drugs.
9	J. B.	3	34	8 hrs. 15 min.	1. Lumin. —9 Amyt. —6 2. Amyt. —3	1. 1 F. 2. 2 F.		0	0	Yes	Good	This case was of interest as being a multipara. She had something with which to compare this delivery. Stated, "It was no trouble at all having this one. I don't remember having had any pains a little while after you gave me that medicine. I felt so sleepy I could not open my eyes." Snored right through labor.
10	M. M.	1	21	8 hrs. 10 min.	1. Lumin. —9 Amyt. —6 2. Amyt. —3	1. 2½ F. 2. 3/4	1. 2 hrs. 2. 30 min.	0	0	Yes	Good	Labor was induced due to staining red. Remembered that she was examined once before receiving the drugs, nothing after that, then woke up and found herself in the ward; was told by the nurse that she had a baby boy.
11	S. J.	1	29	10 hrs. 55 min.	1. Lumin. —7½ 2. Lumin. —3 3. Amyt. —3	1. 1½ F. 2. 3 F. 3. 3½ F.	1. 15 hrs. 2. 9 hrs. 3. 7 hrs.	0	0	Yes	Good	Membranes had ruptured while at home. Induced on admittance by means of castor oil and quinine. When labor had become active, the amytal and luminal were given. Shortly after receiving the drugs, the patient fell into a deep sleep, which lasted throughout the entire labor and delivery. She was very coöperative and remembered nothing.
12	M. F.	1	18	9 hrs.	1. Lumin. —6 2. Amyt. —3 3. Amyt. —6 4. Lumin. —4½	1. 1 F. 2. 1½ F. 3. 2 F. 4. 3/4	1. 7½ hrs. 2. 7 hrs. 3. 6 hrs. 4. 3 hrs.	0	0	Yes	Good	Very quiet through the entire labor. Did appear to be bothered by pains previous to the administration of the drugs, could not remember anything that had taken place while she was in the labor room, which was a period of several hours and during which time several examinations were made.
13	A. W.	2	30	5½ hrs.	1. Lumin. —6 Amyt. —6	1. 2 F.	1. 4 hrs.	0	0	Yes	Fair	Patient very appreciative of the relief obtained from the drugs. She remembered a few things which had taken place, but did say the pains were less severe after receiving the drugs.

TABLE NO. 1 (*Continued*)

No.	Name	Parity	Age	Length of Labor	Amount of Drug Given in Grains	Dilatation of Cervix	Time before Delivery	Toxic Reactions	Restlessness	Coöperative	Amnesia	Remarks
14	M. S.	1	22	22 hrs.	1. Lumin. —6 Amyt. —6 2. Amyt. —3 3. Amyt. —3	1. 2½ F. 2. 3 F. 3. 3 F.	1. 14 hrs. 2. 11 hrs. 3. 7 hrs.	0	Mod.	Fair	Good	Remembered only receiving the drugs and nothing else following that. However the patient showed a moderate amount of restlessness with each pain and would not coöperate when asked to bear down with her pains in the delivery room, in order to bring into play the aid of her secondary forces.
15	L. C.	1	16	3 hrs. 30 min.	1. Lumin. —6 Amyt. —6	1. 2½ F.	1. 2 hrs.	0	0	Yes	None	Found to be a case of hydramnios at delivery. Her labor was very short, due to the delivery of a very small baby. Drowsy up until delivery.
16	M. W.	1	19	10 hrs. 15 min.	1. Lumin. —6 Amyt. —6	1. 3 F.	1. 2 hrs. 30 min.	0	0	Yes	None	Delivered before the maximum effects of the drugs had been exerted. Nevertheless she was not bothered by her pains, was very coöperative, and remembered everything.
17	B. M.	1	17	8 hrs. 15 min.	1. Lumin. —6 Amyt. —6 Pt. vomited ½ hr. later so dose repeated.	1. 2½ F.	1. 4½ hrs.	0	0	Yes	Good	Could not remember having had any severe pains after the drugs were given. She thought she had fallen asleep and did not feel her pains. At the delivery, patient appeared to be awake and was very coöperative. However, she did not remember it.
18	A. Mc.	1	19	3 hrs. 50 min.	1. Lumin. —3 Amyt. —6	1. 3½ F.	1. 2 hrs.	0	Mod.	Mod.	None	Very short labor, delivery taking place before drugs had exerted maximum effects. Delivered of a large baby having a very large meningoencephalocele.
19	C. B.	1	20	14 hrs. 20 min.	1. Lumin. —3 Amyt. —3 2. Lumin. —3	1. 2½ F. 2. 2/3	1. 5 hrs. 2. 4 hrs.	0	0	Yes	Fair	Very good analgesic effects obtained following the administration of the drugs. This was evidenced by the patient quieting down and not appearing to mind the pains. Patient also remarked about the pains being less severe when questioned the next day.
20	T. H.	1	21	8 hrs. 50 min.	1. Lumin. —6 Amyt. —6 2. Amyt. —3	1. 2½ F. 2. 2/3	1. 7 hrs. 2. 4 hrs.	0	0	Yes	Good	Remembered taking the medication, then waking up in the ward and being told by the patients that she had had a baby boy.

TABLE NO. 1 (*Continued*)

No.	Name	Parity	Age	Length of Labor	Amount of Drug Given in Grains	Dilatation of Cervix	Time before Delivery	Toxic Reactions	Restlessness	Coöperative	Amnesia	Remarks
21	D. D.	1	29	23 hrs.	1. Amyt. —9	Not in labor	1. Given when membranes ruptured	0	0	Yes	Slight	Patient remembered quite a great deal of what occurred during the labor due to its prolongation. She stated she could hear those about her but felt so tired and sleepy she could not open her eyes. She was very quiet and coöperative throughout.
					2. Lumin. —6 Amyt. —6	2. 2 F.	2. 12 hrs.					
					3. Lumin. —3 Amyt. —3	3. 2/3	3. 6 hrs.					
22	L. S.	1	23	20 hrs.	1. Lumin. —6 Amyt. —6	1. 1 F.	1. 10 hrs.	0	Slight	Yes	Good	This patient did show some restlessness with pains. She would moan and roll about. Though apparently in a very deep sleep she was very coöperative and responded when talked to, but was unable to remember anything 24 hours later.
					2. Amyt. —6	2. 1½ F.	2. 9½ hrs.					
					3. Amyt. —6	3. 2 F.	3. 9 hrs.					
23	J. L.	1	31	15 hrs. 30 min.	1. Lumin. —6 Amyt. —6	1. 2 F.	1. 6 hrs.	0	0	Mod.	Good	This patient was under the influence of the drug to such a degree that she could not help delivery by the secondary forces of labor. She made no attempt to bear down, but slept right through the entire delivery. She was very quiet and did not remember having had any pains.
					2. Amyt. —3	2. 3 F.	2. 4 hrs.					
24	H. K.	1	25	11 hrs.	1. Amyt. —9 Lumin. —6	1. 1 F.	1. 6 hrs.	0	0	Yes	Good	Almost perfect results were obtained in this case. There was good amnesia and no restlessness. The patient was very quiet and coöperative.
					2. Amyt. —3 Lumin. —3	2. 2 F.	2. 4 hrs.					
					3. Amyt. —3	3. 3½ F.	3. 2½ hrs.					
25	D. C.	1	24	11 hrs. 50 min.	1. Amyt. —3	1. 1 F.	1. 4 hrs.	0	0	Yes	Slight	Patient very quiet and coöperative and did not appear to be troubled a great deal by the pains, but remembered almost all that had taken place until she was given ether.
					2. Lumin. —3 Amyt. —6	2. 1½ F.	2. 2½ hrs.					
26	L. Mc.	1	19	14 hrs. 10 min.	1. Lumin. —6 Amyt. —6	1. 1 F.	1. .12 hrs.	0	0	Yes	Good	Very good results.
					2. Lumin. —3 Amyt. —3	2. 2/3	2. 2 hrs.					

TABLE NO. 1 (*Continued*)

No.	Name	Parity	Age	Length of Labor	Amount of Drug Given in Grains	Dilatation of Cervix	Time before Delivery	Toxic Reactions	Restlessness	Coöperative	Amnesia	Remarks
27	M. Mc.	1	26	6 hrs. 25 min.	1. Lumin. —6	1. 3 F.	1. 5 hrs.	0	0	Yes	None	Patient quiet and coöperative, but conscious of what was going on. Next day she said she believed that the drugs did take away a great deal of her pain.
28	C. C.	1	28	15 hrs.	1. Lumin. —6 Amyt. —6 2. Lumin. —3 Amyt. —3	1. 2½ F. 2. 3½ F.	1. 11 hrs. 2. 5 hrs.	0	0	Yes	Good	This was another case where the patient went to sleep to wake up wondering when she was going to be delivered some hours after delivery. Very good results obtained.
29	E. S.	1	23	26 hrs.	1. Amyt. —9 Lumin. —6 2. Amyt. —3 3. Amyt. —3 4. Lumin. —3	1. 1 F. 2. 2½ F. 3. 3½ F. 4. 3/4	1. 23 hrs. 2. 13 hrs. 3. 9 hrs. 4. 5 hrs.	0	Mod.	Mod.	Slight	Although quiet and asleep between pains, she complained during pains and showed some restlessness especially toward the end of the second stage.
30	M. C.	1	22	7 hrs. 45 min.	1. Lumin. —6 Amyt. —6	1. 2 F.	1. 5½ hrs.	0	0	Yes	Fair	Patient very quiet and coöperative. Received marked relief from pains, but had only slight amnesic results.
31	E. M.	2	21	12 hrs. 20 min.	1. Lumin. —3 Amyt. —6	1. 2½ F.	1. 6 hrs.	0	0	Yes	Good	Patient was very quiet and coöperative throughout. Being a multiparous patient, she was able to judge the difference between the pains of her first and present delivery. Her words were, "If I become pregnant again, I'd like to get the same medicine."
32	N. E.	1	23	11 hrs.	1. Lumin. —9 Amyt. —6	1. 2½ F.	1. 6 hrs.	0	0	Yes	Good	Patient slept through the entire delivery and for several hours after and couldn't remember having had one pain.
33	F. D.	1	22	13 hrs.	1. Amyt. —6 Lumin. —6	1. 2 F.	1. 6 hrs.	0	0	Yes	Good	Though patient did not go into a real sleep she was very drowsy, and unable to open her eyes when asked to. Good results.

TABLE NO. 1 (*Concluded*)

No.	Name	Parity	Age	Length of Labor	Amount of Drug Given in Grains	Dilatation of Cervix	Time before Delivery	Toxic Reactions	Restlessness	Coöperative	Amnesia	Remarks
34	S. R.	2	28	5 hrs. 15 min.	1. Lumin. —9 Amyt. —9	1. 1 F.	1. 2 hrs.	0	0	Yes	None	In this case the drug did not have enough time to exert its maximum effect before delivery. Although she was quiet and coöperative, she remembered all. The drug may not have been the cause of the result.
35	A. C.	1	23	29 hrs. 10 min.	1. Lumin. —6 Amyt. —9 2. Amyt. —3 3. Amyt. —6	1. 1½ F. 2. 2 F. 3. 2/3	1. 15 hrs. 2. 14 hrs. 3. 6 hrs.	0	0	Yes	Moder.	Patient was very quiet, and coöperative. She remembered being given the drugs, then being taken to the delivery room and given ether. The prolonged labor here was due to R. O. P. presentation.
36	A. B.	1	20	7 hrs. 40 min.	1. Amyt. —9 Lumin. —6 2. Amyt. —3 Lumin. —3	1. 2½ F. 2. 2/3	1. 2 hrs. 2. 1 hr.	0	0	Yes	Moder.	Patient was overdue and because of a large baby, she was induced. She slept through the entire first stage and the greater part of the second. Remembered taking ether and remembered those in the delivery room. Stated pains were about the same after receiving the drugs and they did not get any worse.
37	E. D.	1	19	24 hrs. 55 min.	1. Amyt. —9 Lumin. —6 2. Amyt. —6	1. 2 F. 2. 2 F.	1. 10 hrs. 2. 9 hrs.	0	Marked	Yes	Good	Fairly good results. Patient could not remember anything that took place after receiving the drugs. She awoke and found herself in the ward. She was very restless toward the end of the second stage.
38	M. G.	1	18	12 hrs. 50 min.	1. Amyt. —9 Lumin. —6 2. Amyt. —3 Lumin. —3 3. Lumin. —3	1. 2 F. 2. 2½ F. 3. —	1. 11 hrs. 2. 7 hrs. 3. 2 hrs.	0	Moder.	Yes	Fair	Patient remembered nothing that took place while she was in the labor room, but remembered being taken to the delivery room and given ether. After she had become fully dilated, and could not help bearing down, she became quite restless, crying out loud because of pains. However, after being talked to, she quieted down considerably.
39	H. M.	1	18	10 hrs. 30 min.	1. Amyt. —9 Lumin. —6 2. Amyt. —6	1. 2 F. 2. 3½ F.	1. 9½ hrs. 2. 3 hrs.	0	0	Yes	Moder.	Patient very quiet throughout. She remembered being given the second dose of medicine, but could not remember what happened in between the first and the second. She said, "I guess I fell asleep."

size of this second dose depended on: 1. The progress of labor. 2. The amount of restlessness. 3. The severity of the pains. 4. The general condition of the patient. The same principles were followed in those cases of prolonged labor where more medication than usual was necessary. Usually, in these cases, a third and fourth dose had to be administered in order to obtain the desired results.

The dose given varied from three to six grains of whichever drug was indicated, i.e., more amytal if the patient appeared awake and conscious of what was going on; more luminal if the patient was restless, or both if necessary.

In this manner we were able to carry the patient through the first stage and into and up to, the last part of the second stage of labor, when the patient was moved from the labor room into the delivery room and the delivery completed under ether.

SUMMARY

The chief drawback to the use of sodium amytal in obstetrics is the restlessness it produces. Luminal, another barbituric acid preparation, was used to counteract this undesirable effect, through its greater sedative action. Restlessness was found to be absent in 30 cases or in 77%, marked in three cases or 8% of the series, found present to a moderate degree in five cases or 13%, and in a slight degree in only one case or in 2% of the total series.

Complete amnesia was obtained in 24 or 62% of the cases, moderate or a fair amount in seven or 17% of the cases, absent in five or 13% of the cases, and found in a slight degree in three or 8% of the cases.

Coöperation on the part of the patient was obtained in 32 or 82% of the cases, absent in two or 5% of the cases, and present in a moderate degree in four or practically 10% of the series.

The method of administration varied with the individual case.

Some important observations noted were:

1. Less nursing care is required.
2. Only one in this series of cases developed a toxic rash, and it also appeared on the baby.
3. Bladder distention to the point where catheterization was required was seen.
4. No harmful effects on the babies were noticed, none of our cases requiring artificial respiration.
5. Labor apparently is prolonged by using luminal, the average length of labor in our primiparous patients being 13 hours and approximately 30 minutes, this number, 35 primiparous patients, making up 89½% of the total number of cases.

CONCLUSION

Even by this small series of cases, the use of luminal in conjunction with amytal in obstetrics is apparently justified.

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The author would like to take this opportunity to express his gratitude to Dr. A. K. Paine, who made it possible to carry this work out on his service, and to Dr. Sydney Ellis, for his help in compiling these records.

SEVERE THALLIUM ACETATE INTOXICATION CAUSED BY THE USE OF A DEPILATORY CALLED "KOREMLU"

Report of Case

BY ABRAHAM RUDY, M.D.*

THALLIUM acetate is by now well-known as a deadly poisonous drug. Reports of accidental deaths caused by oral administration of this drug in a single dose are numerous. It is also recognized that its use in the form of an ointment may be followed by severe toxic symptoms.

I am reporting here a case of severe thallium poisoning which followed the use of a depilatory called Koremlu. Although my case was diagnosed in January, 1930, I could not report it sooner because the patient, who is the wife of a physician, objected to my doing so until now. The following points are of interest: 1. The diagnosis was made at a time when Koremlu was not yet known as a dangerous ointment. 2. The most common symptom of generalized alopecia is missing in this case in spite of the fact that the other symptoms were acute and severe.

The patient was a young woman of 29 whose illness began January 15, 1930 with aches and pains in the thighs and legs. She felt as if she were getting the grippe. The pains soon increased in severity and became especially intense in the lower back, so that she was partially confined to bed. The temperature was normal. The physical examination showed tender spots in the lower back, buttocks, and thighs and was negative otherwise. She had difficulty in rising and in resuming the sitting position. The patient was seen by an orthopedic consultant who made the diagnosis of "lumbago" and strapped her back. Her condition, however, grew rapidly worse, and she was confined to bed. The pain was localized below the waist from the lower back to the ankles, and was aggravated by attacks of cramps in the thighs and lower abdomen. The abdominal cramps were described to be similar to the uterine cramps during the menstrual period. There were days when she was unable to change the position of her legs without suffering violent pains, so that she continued lying for hours in the same position, being afraid to move. Narcotics were required for relief. The temperature and pulse continued to be normal. The physical examination showed tenderness in spots as described above with the knee jerks almost abolished. The urinalysis, serology and blood chemistry were normal. The white count was normal, and the blood smear showed a slight lymphocytosis, otherwise there was nothing abnormal. There was a slight anemia which was present previous to her illness.

She was seen by a medical consultant together with the orthopedic consultant, and it was agreed that we were dealing with a toxic myalgia and neuritis of unknown origin. Both consultants thought the patient was neurotic and overexaggerated her pain.

Her condition continued essentially the same until one day the medical consultant made some remark about an anaphylactic reaction. The following day the patient asked me whether an ointment could cause an "anaphylactic reaction". She then informed me that for the past four weeks she has been using on her face a depilatory cream called Koremlu which was highly recommended by a well-known beauty specialist and was advertised in the newspapers. The patient was especially enthusiastic about its use because of its great demand in some of the best department stores. She had just finished applying a two ounce jar of this ointment and asked whether she might renew it. In spite of the fact that I did not at first think that the ointment had any relation to her illness, I suggested that she should omit it, and should find out its constituents from the company. Coincidentally, with the omission of the ointment she improved markedly. This relationship however, escaped my attention, so that when the reply from the company stated emphatically that the cream was harmless, and was registered with the health department of New York State, I permitted the patient to resume the use of it.

The patient suffered a sudden relapse of her violent pains in the legs and this made me suspicious at once that Koremlu might have been the cause of her illness. I immediately stopped the ointment and wrote to the New York Board of Health, who advised me that the active ingredient of Koremlu is thallium acetate in about one and two-thirds per cent strength (about .5 gram to each ounce of ointment). This clinched the diagnosis of thallium poisoning.

The recovery was slow and uneventful. There was a residual tenderness in the muscles of the thighs and buttocks and weakness in the legs for several weeks. The patient was confined to bed for about six weeks with the attendance of a nurse. Generalized alopecia, which is one of the most common symptoms in thallium poisoning, was missing in this case.

Drug toxicoses of this type often remain unrecognized. The possibility of an unexplained symptom picture being due to the use of cosmetics should always be thought of.

COMMENT. Thallium acetate was first used by Combemale[1] in 1898 for the relief of night sweats in tuberculosis. It proved to be effective, but in many cases, as observed by Combemale and others, it has produced violent pains, especially of the legs, loss of hair, and other disagreeable symptoms. The loss of hair was the most common symptom. Because of this property, thallium acetate became popular among dermatologists in the treatment of tinea capitis in children. It is administered in children orally in a single dose of 4 to 8 mg. per Kg. body weight. It is more toxic at the age of puberty. The therapeutic dose is very near to the lethal dose so that for the past few years many cases of accidental deaths have been reported[2, 3]. Death may follow even a well-calculated dose.

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Thallium acetate as a depilatory in the form of a one per cent ointment was first recommended in 1912 by Sabourraud[4], an authority on diseases of the hair and scalp. Even this preparation was followed by a number of accidents so that Sabourraud himself gave it up in favor of x-ray treatment. In a note to the medical journals[5] he explained that his ointment should not contain more than one per cent thallium acetate and the portion used should equal the size of two kernels of wheat applied every evening on a limited surface, for example the upper lip. But if one uses an ointment containing a higher percentage of thallium acetate, or if one applies the ointment at one time over more extensive surfaces accidents may be expected.

Thallium is a metal of Sp. Gr. 1.185 and melting point 302°C., insoluble in water, but is dissolved in nitric or sulphuric acids. This metal, discovered by spectrum analysis, has been found to occur widely in nature. It is an active poison closely related to mercury and lead, and only slightly less toxic than arsenic. It is distinctly cumulative in its effects, so that small doses repeated over periods of time may produce serious intoxication. Curci[6] claims that thallium is exclusively a muscle poison and Rabuteau[7] as long ago as 1874 recorded that, after thallium administration to lower animals, the muscles did not respond to irritation.

The Bureau of Investigation of the American Medical Association has received a number of letters reporting the ill-effects following the use of Koremlu[8]. Some of these cases have been reported during the past year in the *Journal of the American Medical Association*. The A. M. A. Chemical Laboratory at the request of the Bureau of Investigation has made an analysis of this cream and found that it contained about seven per cent of thallium acetate. It is evident from this report that the Koremlu cream on the market has a much higher content of thallium acetate than the cream which was presented to the New York Health Department for approval. Since Sabourraud warns against the use of an ointment containing more than one per cent thallium acetate, it is not surprising that a seven per cent thallium acetate cream has caused so many accidents. The public should be strongly warned against the use of Koremlu.

Thallium is now used in many countries in the preparation of rat poison. Its menace to the worker who is in constant contact with the paste is evident. Kaps[9] and Haberda[10] reported a successful homicidal case in Germany with Zeliopaste, a rat poison containing thallium. Rambar[11] in this country has observed an acute thallium poisoning due to accidental ingestion of a rat poison. Since thallium is such a dangerous poison, all the preparations containing this metal should be removed from the free market or at least labeled as poison.

SUMMARY. A case of thallium acetate intoxication caused by the use of Koremlu cream is reported. The dangers accompanying the use of thallium in any form are discussed. The difficulties encountered in the diagnosis of this case are described.

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ALCOHOL AND MORTALITY

Dr. Haven Emerson, who is the editor of the recent publication "Alcohol and Man," is reported to have claimed that prohibition has succeeded in reducing the amount of alcoholic beverages consumed in the United States. This is shown by the lowering of the death rates and sick rates from causes related to alcoholism. This statement was made in a report to the American Academy of Political and Social Science in Philadelphia on November 12.

Dr. Emerson states that the figures for per capita consumption of alcohol in this country are not known since prohibition, but that, in other countries, statistics indicate that sickness and death rates show that wherever the per capita consumption of alcohol has fallen, there have been, in relation to the general population, fewer deaths and less sickness due directly or indirectly to alcoholism.

Besides the general reduction of death and sickness rates from causes related to alcoholism since prohibition, Dr. Emerson found impressive changes in the relative male and female death rate. He suggests that common experience shows that particularly among city dwellers the death rate for men has considerably exceeded that for women in each five-year period between the ages of fifteen and sixty-five. This has been generally attributed to the fact that women are better protected against industrial hazards and exposure to weather.

Recent studies in Germany and Denmark have shown that when less alcohol is consumed there is less difference in male and female death rates between fifteen and sixty-five years of age. In the United States the differences in these rates have also grown less since prohibition, which Dr. Emerson takes to be good circumstantial evidence that there is less drinking, particularly among men of the laboring class.

CASE RECORDS
of the
MASSACHUSETTS GENERAL HOSPITAL

ANTE-MORTEM AND POST-MORTEM RECORDS AS USED IN WEEKLY CLINICAL-PATHOLOGIC EXERCISES

EDITED BY RICHARD C. CABOT, M.D.
F. M. PAINTER, A.B., ASSISTANT EDITOR

CASE 18511

DYSPNEA AND SUBSTERNAL PAIN

MEDICAL DEPARTMENT

First admission. An American shoe factory operative of fifty-six entered eleven months before his final admission complaining of increasing dyspnea on exertion of a year's duration.

Two years before admission he had an attack of sudden severe substernal pain while walking. It did not radiate or double him up and passed off in a few minutes, leaving no residual soreness. Following this he had frequent similar attacks, always associated with exertion and relieved by rest and nitroglycerin. The pains became less frequent and after five months stopped. For the next six months he was free from symptoms. A year before admission he noticed dyspnea and increasing weakness. Three months later he entered a hospital, where he stayed for three weeks with improvement but with only partial relief of the dyspnea. A month before admission he returned to work. His dyspnea increased rapidly. During the past week he had developed a slight non-productive cough with wheezing respiration, especially on lying down. For three days his ankles had been swollen. For two days he had had urgency and urinary incontinence.

His wife had had one miscarriage, no other pregnancies. The family history is not otherwise of interest.

At thirty-two he was laid up in bed for two months with "rheumatic fever"—fever without joint or cardiac symptoms. Fourteen years before admission he was incapacitated for a year by a "nervous breakdown". For an unspecified period he had urinated at night once or twice a week.

Physical examination showed a slightly obese man with cyanotic lips. The chest was barrel shaped. The heart showed questionable slight enlargement to the left (left border of dullness 10 centimeters, midclavicular line 8). The rate was regular. The sounds were distant and muffled, with a very short systolic interval and an accentuated first sound. There were no murmurs. The pulses were normal. The artery walls were palpable. The blood pressure was 136/100 to 100/65. An electrocardiogram showed partial auriculoventricular block; PR interval 0.28; left axis deviation; slurred and widened QRS in all leads. The breath sounds were harsh at the right apex front and back. There was prolonged expiration throughout the chest. There was slight increase of dullness at the left base with diminished breath sounds, voice sounds and tactile fremitus. There were numerous moist râles at both bases with sonorous loud and soft râles scattered over the rest of the chest, especially at the right apex anteriorly. A slightly tender liver edge was felt at the costal margin. There was pitting edema of both lower legs. The pupils were slightly irregular and reacted very sluggishly to light, not at all to accommodation. The other reflexes were normal.

The amount of urine was 36 to 90 ounces, the specific gravity 1.020 to 1.030. There was a slight trace of albumin at the first of five examinations, none later. The sediment showed 1 to 16 white blood cells per field at all. The renal function was 20 per cent. The non-protein nitrogen was 41, 29, 36. The blood was normal except for a leukocytosis of 11,600 to 15,400 during the first two weeks. A Hinton test was negative.

The chart was normal except for one rise of temperature to 99.8°.

During the night of admission the chest slowly filled with crepitant and moist tracheal and bronchial râles with wheezing respiration. There was no orthopnea and only slight cyanosis. Venesection was done with relief. The patient gradually improved. At the end of a week a cardiac consultant found the heart large, the first sound practically inaudible, being replaced by a strikingly reduplicated apex beat. At the end of twenty-five days the patient was discharged still doing well, with the lungs clear.

History of interval. A month after his discharge an electrocardiogram showed normal rhythm; rate 80; left axis deviation; inverted T waves in lead I; PR interval 0.21 second; less block. Although he had been advised not to return to work, at the end of about a month he attempted to do so, but was obliged to give up after a week. He continued to be up and about for the next nine months, with an occasional day or two in bed. Three weeks before his readmission he became weaker and more dyspneic and consulted a doctor. He continued to be up and about while taking the doctor's medicine. For a few days before his second admission he was very dyspneic and slept poorly.

Second admission, ten months after his previous discharge.

Physical examination was as before except as noted. He was sitting up in bed breathing with great difficulty, with Cheyne-Stokes respiration, frequent cough and occasional muscular twitchings. The apex impulse of the heart was not felt. An impulse was felt in the second and

third interspaces to the left of the sternum. The sounds were of poor quality. There was a soft systolic murmur at the apex and the base. The pulmonic second sound was accentuated The blood pressure was 150/110 to 140/85. The chest showed coarse transmitted râles throughout, with fine moist râles in the left axilla and at both bases posteriorly. The abdomen was very protuberant, the wall edematous. There was moderate tenderness in the right upper quadrant. The liver and spleen were not felt. There was dullness in the flanks; although no shifting dullness or fluid wave was made out, it was thought that ascites was probably present. There was edema of the lower extremities and buttocks.

The urine showed a trace of albumin, specific gravity 1.028, 5 to 10 white blood cells and 5 to 10 reds per field. Blood examination showed 15,900 to 20,000 white cells, 85 per cent polynuclears, platelets decreased. Another Hinton test was negative. The non-protein nitrogen was 50 to 51 milligrams.

Venesection was done shortly after admission and 400 cubic centimeters of blood withdrawn with considerable relief. On the second day another venesection, 300 cubic centimeters, was done. On the third day the twitchings were less and the patient seemed more comfortable but was slightly irrational. He voided voluntarily. There was very slight residual. In the morning the temperature, which previously had been 99° to 100.8°, rose to 104°. In the afternoon it fell to 100° but during the night again rose to 104°. Early the following morning the patient died.

Clinical Discussion

Dr. Richard C. Cabot: The period of eleven months and one year takes his dyspnea back to about two years before the time with which we are dealing.

I think it is rather extraordinary how a history like this, as compared with any other I know in medicine, goes ordinarily with one diagnosis only. If we have pain anywhere else or under any other circumstances, we have to consider many possible diagnoses. But I shall be greatly surprised if it is anything but coronary disease here. We have no pathognomonic histories, but that is as near a pathognomonic history as anything we have. Another point tends to support the first guess,—the method of relief, which is one of the ways in which we judge the significance of any pain.

That this pain—angina pectoris—should have stopped after five months is unusual except in the cases coming immediately after an infectious disease, as we sometimes have it, and getting well with the total convalescence from that disease,—after pneumonia for instance. We do not ordinarily see the disease get better as it did here.

We notice that with the onset of this dyspnea nothing is said about pain. That is a point brought out a great many years ago by Dr. John Musser of Philadelphia, who pointed out that when compensation fails in a case characterized by angina, the angina stops. In other words, one of the factors in angina is a fairly good heart muscle, presumably working in a heart not well supplied with blood; but when the heart muscle fails and we begin to get dyspnea and dropsy, then the pain stops. That is one of the few good things we can say about heart failure, that it may give relief to a very terrible pain.

So far then we have a straight cardiac history, but a cardiac history which contains two things often quite separate in such histories. The majority of people who have coronary disease and the symptoms resulting from it are not plagued so much, if at all, by dyspnea and heart failure; and the majority who have heart failure are not so often plagued by pain.

I do not believe we could have made a diagnosis of rheumatic fever in this case without joint or cardiac symptoms, or anything apparently except fever. I never heard of a man making a diagnosis of rheumatic fever without anything more.

We can argue nothing from his "nervous breakdown".

At the beginning of the physical examination I should say this was still a case characterized by angina pectoris, and later by cardiac failure, with a possible rheumatic history which we may have to take account of later. Everything points one way,—to the heart.

I do not know the meaning of "systolic interval". I do not believe that is what he meant to write. He may mean postsystolic interval. The first sound of the heart is supposed to be longer than the second. Phonocardiograms show that the first sound lasts longer than the second. That is what he may mean. The PR interval was lengthened from 0.20, which it should be, to 0.28, a considerable variation often leading to heart block. Left axis deviation means ordinarily a big left ventricle, as against mitral disease, for instance, which would ordinarily give right axis deviation. The slurred QRS means poor conduction and so, poor muscular action.

Harsh sounds at the apex front and back, with no other physical signs, mean nothing so far as I know. "Slight increase of dullness" is a bad phrase. "Slight dullness" is what they mean, I suppose. These signs at the left base should mean fluid; at the right base they might mean a large liver. At the left base then that ordinarily means left hydrothorax.

The right apex anteriorly is a queer place for râles associated with a failing heart. It is one of the places we least often hear them. One has to consider, then, the possibility of there

being some tuberculosis there, although there is nothing else to suggest it except the harsh breathing mentioned before.

The pupils were not characteristic of anything.

Normal kidneys, so far as we can tell from the urine. If we had a good history of chronic hypertension we might expect the pathologist to say that they showed the result of chronic hypertension irrespective of what the urine shows. One of the things I have learned lately is that no human being can say from the urine whether the kidney has the particular change associated with hypertension. We do not know yet whether this patient had hypertension. He was on the borderline of it when he came here, but it would be rash to predict any change in his kidney.

This slightly high non-protein nitrogen would indicate passive congestion, which he certainly has, whatever else he has.

I do not know any explanation of the leukocytosis.

Apparently they did the Hinton test without a Wassermann.

DR. TRACY B. MALLORY: We do a Hinton test as a matter of routine on every case, and if the Hinton is positive we confirm it with a Wassermann. If the Hinton is negative we do not necessarily compare it. We have been doing this for about two years. The Hinton is a little simpler and on the whole a little more sensitive.

DR. CABOT: It is quite conceivable, then, that as times goes on you may go on with that alone.

DR. MALLORY: It is conceivable, but there are at least a dozen modifications and new tests that have come up within the past few years and we may be shifting to one of those some day.

DR. CABOT: "At the end of a week the first sound was practically inaudible." We remember that it was loud at the beginning. The signification of a reduplicated apex beat, so far as I know, is zero. Reduplication of the second sound is very important, sometimes the precursor of a middiastolic murmur.

A month after his discharge the PR interval was 0.21 instead of 0.28, so that it had come down very close to normal. "Less block" goes without saying. There is nothing about the QRS this time.

This is the tragic history which we face so often, of a man trying to buck the limitations of his heart. In poor men who have only heavy work as a means of livelihood it is one of the greatest tragedies I have ever seen.

At the second admission he has orthopnea, which he did not have before, and I wonder why he now has. This time there is another very bad prognostic sign with it, — Cheyne-Stokes respiration.

Muscular twitchings are not characteristic of any kind of heart disease, and make us wonder whether I was wrong in supposing the kidneys to be normal. Muscular twitchings, of course, do go with nephritis. The blood pressure, 150/110, is the highest we have had. When the abdominal wall is as edematous itself as was apparently the case here we often cannot make out a fluid wave.

Still I should say there is no evidence of nephritis so far as the blood is concerned. The non-protein nitrogen is a little higher than before, but I should say not high enough to have any distinctive significance.

Summary: Here is a man of fifty-six whose past history is negative except for a possible rheumatic fever. I should say the evidence of that was so slight and the evidence in the heart of any damage from it so slight that we had better not say that we expect any evidence of rheumatic disease in the heart. At fifty-six the commonest type of heart disease is hypertensive, sometimes with arteriosclerosis, sometimes without it. At the first admission we had not much evidence of this. The second time we had. My guess is that he had had hypertension a long time and that the pressure had gone down temporarily the first time as it did the second time. I believe it is a hypertensive heart that is hypertrophied and dilated but with no important valve lesions. One or more of the coronaries should be narrowed. There is no evidence of a syphilitic change in the heart.

The only discussable question that I see is about the kidney. We have to bring this up again because of the slightly high non-protein nitrogen and the twitchings. Muscular twitchings are not characteristic of heart disease alone. In spite of that I see no good evidence that the kidney is diseased. I believe the pathologist will say there is enough kidney substance there to function well.

I believe there will be nothing else of importance found aside from the terminal infection, which I shall speak of, and the passive congestion,—ascites, hydrothorax, dropsy,—wherever we can observe it.

He had fever at the end. We can do nothing here but call to mind the usual things which cause fever at the end of a case like this. Bronchopneumonia is much commoner than anything else. What other things should we think of as possibilities? Pericarditis is common in cases of this type, not so common as in cases of nephritic disease. We have no signs of it, but that does not make any difference. I should say these are the two diseases most apt to cause this temperature, but we cannot do more than guess.

A STUDENT: Would the coronary occlusion cause that much fever?

DR. CABOT: I should say not. It is perfectly true that we can have coronary thrombosis with-

out pain and with that it is possible to have fever. It has been brought out repeatedly of late years that we can have occlusion without pain. But I do not see how we can diagnose coronary thrombosis from the facts given us.

A STUDENT: Do you expect any emphysema?

DR. CABOT: No; but I shall have to add that it is perfectly possible that he has it. No one can make a diagnosis of emphysema on the basis of a barrel chest alone. There are just as many barrel chests without emphysema as there are with it. If we had x-ray evidence about the movements of his diaphragm and about extra bright lungs we might make the diagnosis. But barrel chest alone is not characteristic, and the râles that go with it can be the râles of passive congestion.

A STUDENT: Would prolonged expiration go with passive congestion?

DR. CABOT: Yes.

A STUDENT: Is there any truth in the statement that all men over fifty-five have emphysema?

DR. CABOT: We will ask Dr. Mallory about that.

DR. MALLORY: I think it is true in a sense. The alveoli of the average man over sixty are uniformly larger than those of the average man of twenty-five or thirty. It is a slight change, however; it is very far from being clinical emphysema.

DR. CABOT: It is pathological rather than clinical emphysema.

A STUDENT: Would the congestive heart failure account for the white count?

DR. CABOT: No. Of course this is a very common disease and we have many chances to watch it. I think we can say positively it does not produce leukocytosis.

A STUDENT: Is there any significance to palpable vessels in obese people?

DR. CABOT: No, I should say not. Of course those vessels that we feel are arteriosclerotic, but as you know, we cannot say anything as to the condition of the more important internal vessels by what we feel externally.

A STUDENT: What test of renal function was used?

DR. CABOT: I take it that it was the regular red test, the phthalein test.

A STUDENT: Is not twenty per cent quite low?

DR. CABOT: No, not at all. Most people as ill as this have twenty or lower. Anything that makes a man very ill drives his kidney excretion down, as his kidney circulation and everything else are very low.

A STUDENT: Is the muffled first sound evidence of emphysema?

DR. CABOT: No, I should not think so.

CLINICAL DIAGNOSES (FROM HOSPITAL RECORD)

First Admission

Arteriosclerotic heart disease.
Coronary occlusion.
Congestive failure.

Second Admission

Arteriosclerotic heart disease.
Cardiac decompensation.
Ascites.

DR. RICHARD C. CABOT'S DIAGNOSES

Hypertensive heart disease.
Hypertrophied and dilated heart.
Narrowed, possibly occluded coronary artery.
Chronic passive congestion.
Bronchopneumonia?

ANATOMIC DIAGNOSIS

1. *Primary disease.*

(Hypertensive heart disease.)
Infarcts of the heart, old and recent.
Occlusion of the descending branch of the left coronary artery.

2. *Secondary or terminal lesions.*

Lymphoma, giant follicular type.
Hyperplasia of the spleen.

3. *Historical landmarks*

Emphysema of the lungs.

PATHOLOGIC DISCUSSION

DR. MALLORY: The most important part of this case was the man's heart, which weighed 650 grams. It showed complete occlusion of the descending branch of the left coronary artery, with a sizable area of infarction on the anterior wall of the left ventricle. Part of this was an old fibrous healed infaret which very possibly goes back to his anginal attack of a year ago. At its edge there were some fresh hemorrhagic areas which we thought represented newer infarction.

The lungs showed a slight, not very marked emphysema. There was a very slight trace of bronchopneumonia, not very much but perhaps enough to account for the white count. The kidneys were essentially negative.

There was one complete surprise about the autopsy, and that was a rather general, fairly well marked enlargement of the lymph nodes, particularly in the abdominal region, but also of the bronchial lymph nodes. Microscopic examination shows a typical lymphoma of the so-

called giant follicular type. If he had not happened to die of this heart disease he might have died within five or six years of lymphoma. This is a type which grows very slowly and responds to radiation.

DR. CABOT: Where were the biggest nodes?

DR. MALLORY: In the roots of the mesentery and the upper retroperitoneal nodes.

A STUDENT: Did the liver show chronic passive congestion?

DR. MALLORY: Yes.

A STUDENT: Was that the cause of that pain?

DR. MALLORY: Yes. It is quite typical.

A STUDENT: Was the spleen enlarged?

DR. MALLORY: It weighed 450 grams. That is nearly three times normal.

CASE 18512

A CASE OF ITCHING AND LOSS OF WEIGHT IN A MAN OF FORTY-FOUR

UROLOGICAL DEPARTMENT

First admission. An Irish-American bond salesman forty-four years old entered for the first time one month before his second admission complaining of itching and loss of weight.

More than seven months before entry he began to have gradually increasing itching behind the knees. Soon white vesicles appeared, at first after scratching, then spontaneously. There were three remissions, but at last the itching became so violent that for seven months it had seriously interfered with his sleep. Since the onset he had had occasional slight edema of the ankles. For six months he had urinated two or three times at night.

He had been ruined financially in the past two years, had been under nervous strain and had been unable to eat regularly. In the past year he had lost 24 pounds.

His wife had had one miscarriage. Two children were living and well.

He had pleurisy eight years before entry. He had rare headaches. The hearing in his left ear had been bad for years. Recently his near vision had been poor.

Physical examination showed a poorly developed and very poorly nourished man. The chest was flat and asymmetrical, with Harrison's groove. There was poor expansion. The heart was of the ptotic type. No enlargement or other abnormalities were noted. The blood pressure was 170/110. The lungs were clear except for slight dullness and increased breath sounds and whispered voice at the apices posteriorly. In the right lower quadrant there was an ill defined nodular non-tender mass. In the left para-umbilical region there was a firm slightly tender mass, probably the spleen. There was phimosis. Shotty inguinal nodes were felt. There was slight pitting edema of the lower legs. The skin of the body and the extremities showed excoriations.

The amount of urine was 29 to 34 ounces when recorded. The specific gravity was 1.008 to 1.010. There was a slight trace to a very slight trace of albumin at all of four examinations. Both of two sediment examinations showed 4 to 6 white cells per field; one showed 2 to 5 reds. The renal function was 2 per cent. The non-protein nitrogen was 100 to 90. Blood examination showed hemoglobin of 40 per cent Tallqvist, later 54 per cent Sahli. There were 2.57 to 3.23 million red cells. The white cells, differential count and the first smear were normal. A second smear showed 0.2 per cent reticulocytes. A Hinton test was negative. The blood sugar, fasting, was 110 milligrams. The creatinin was 7.8 milligrams. A van den Bergh was normal.

Before operation the temperature was 97.5° to 99.4°, the pulse 72. The respirations were normal.

On the tenth day circumcision was done. Four days later cystoscopy was done and pyelograms were taken. On the nineteenth day the patient was discharged unimproved.

History of interval. For several days after his discharge he felt well. Then he began to lose ground and to run a temperature, rising at times to 103°. Eight days after discharge he had two severe generalized convulsions.

Second admission, nine days after his previous discharge.

On examination he was in semicoma. He could be roused and answered questions fairly rationally but immediately sank back. He was dehydrated, breathing deeply. There were slight twitchings about the face. The breath was ammoniacal. His eyes were exophthalmic and partially fixed. The hands and feet were sweating and cold. The blood pressure was 98/60. The pulse was irregular.

The patient remained in coma or semicoma but rallied at times surprisingly to a lucid state. He had two or three attacks of convulsive twitchings. The non-protein nitrogen was 130, 330, 220. He voided moderate amounts of dilute urine. There was moderate itching of the skin. On the third day he had nausea and vomiting. That day he died.

CLINICAL DISCUSSION

DR. MAURICE FREMONT-SMITH: I think we may assume that he did not have the very common causes of itching,—scabies, pediculosis, urticaria. The other things we think of with regard to the symptom of itching are (1) jaundice, (2) Hodgkin's disease, (3) leukemia, (4) uremia. Are there any others?

A STUDENT: Neurodermatitis.

DR. FREMONT-SMITH: I do not know much about it.

A STUDENT: How about eczema?

DR. FREMONT-SMITH: With eczema we should have skin lesions present and he did not have them. The lesions came out after he scratched.

That history does not give us very much lead as to what is the matter with him. The pleurisy of course makes us think of a possible tuberculosis as the cause of his loss of weight; his inability to eat makes us wonder whether he might have cancer of the stomach, the earliest symptom of which is often loss of appetite. But none of those things attach themselves in our minds to the chief symptom, which was the itching.

In a man of forty-four a blood pressure of 170/110 shows a very definite hypertension. Especially is the diastolic blood pressure significant. As we all know, a good many patients, when we first take their blood pressure, will run 20 to 40 millimeters higher than they will a few minutes later. Consequently it is a very wise thing to take the first measurement, then talk to the patient and take it again. You will be surprised at the fears in your own mind which may be dissipated by taking it again. But a diastolic of 110 always means something.

"The lungs were clear except for slight dullness and increased breath sounds and whispered voice at the apices posteriorly." That is a finding which in the first place is a very hard one to judge correctly, and in the second place may not mean anything even if it is so. He was very thin. The sounds would come through, and sounds can always be heard better in such a chest. Of course it may mean an old healed tuberculosis.

So far we have itching, a blood pressure that is too high, and tumors in the abdomen. We can put those all together, I suppose. We can say that the itching and the blood pressure are both consistent with failing kidneys, and abdominal masses may be tied together into a diagnosis of polycystic kidneys. On the other hand the masses in the abdomen are not so symmetrical as we should expect. Usually polycystic kidneys show masses rather symmetrical in the two sides of the abdomen.

There is another possibility. We have shotty inguinal glands. In almost everybody we can feel enlarged inguinal glands. Consequently I should very much like to know whether there were any other glands elsewhere in the body. One might perhaps sum up the story in this way: large palpable glands, a spleen (if it is a spleen), and Hodgkin's disease. Those are the two possibilities that appear.

The specific gravity of the urine was fixed at a low level, so I think whatever else the case shows, the kidneys will show nephritis. There is nothing in the urine really except a low gravity and a little albumin, but of course that may be enough. The non-protein nitrogen was 100 to 90. In other words his kidneys were not putting out nitrogen. There is marked anemia. There is nothing abnormal about the reticulocytes. We can have as high as one per cent in a normal smear. The creatinin is of course far above the normal and gives a very poor prognosis.

There must have been some good reason for doing a circumcision in a man as ill as this. Just off-hand one would say, why in the world submit this man to the strain of anesthesia? I should say it was a very unwise thing to give this man ether. Perhaps they did not give him ether.

DR. TRACY B. MALLORY: They could not pass the cystoscope.

DR. FREMONT-SMITH: And they were very anxious to pass the cystoscope. Perhaps they felt that he had polycystic kidneys. Even so, with that renal function I think it would probably be just as well not to do a cystoscopy. There was probably some good reason in the mind of the man who did it, but personally I should probably try to prevent a cystoscopy being done, because of course we know that after cystoscopy a kidney may shut down entirely. Now if one shuts down and the two together are barely sufficient, we may get into serious trouble.

DR. JAMES C. WHITE: Possibly they wanted to rule out enlargement of the median lobe of the prostate.

DR. FREMONT-SMITH: Would not a catheter have told that story? It would have been wiser to let out the urine slowly.

DR. WHITE: Presumably he did not have a distended bladder or they would have palpated it.

DR. FREMONT-SMITH: Convulsions would not be unexpected I should say. He was in shock, and in shock probably from poisoning owing to lack of kidney function. The non-protein nitrogen is going down, perhaps after they got fluids into him intravenously

I do not think there is very much more to say except that he certainly died of kidney failure, and that we shall find evidence of very definite kidney pathology. I think that if we wish to tie all the story together, as we should, polycystic kidney explains the condition best, and if we have polycystic kidneys we have no reason to postulate anything else, not even a Hodgkin's or lymphoma. So I think we had better make that diagnosis.

CYSTOSCOPY

A preliminary examination showed extending from each kidney region downward almost to each iliac crest a large, somewhat coarsely roughened mass, non-tender and freely movable with respiration.

The bladder mucosa was normal. No stones, tumors, diverticula or areas of inflammation were seen. The prostate was slightly enlarged symmetrically (as a collar) and slightly inflamed, but was not bleeding. The ureteral ori-

fices were normal. Clear urine was seen coming from each. The ureters were easily catheterized. The bladder urine was slightly hazy and pale. That from the kidneys came with intermittent flow, poorer on the left, and was of low concentration. All three specimens showed many white cells, red cells and casts of all kinds. Culture from the urine from the right kidney was sterile; that from the left kidney showed colon bacillus.

FURTHER DISCUSSION

DR. FREMONT-SMITH: It may be worth saying that oftentimes a fresh specimen of urine will show casts, whereas one that has been left over a few hours, especially if alkaline, will not. I think this report would not change my diagnosis.

PYELOGRAMS

The kidney outlines were indistinct on both sides. There were no visible stones. The liver shadow seemed large. There was an anatomical variation at the sacrolumbar junction, partially sacralized vertebrae. In the region of the stomach there were shadows which suggested gyroscopic rugae.

A retrograde pyelogram ten days later showed the shadow of the injected kidney pelves unusually large and distorted, presenting the characteristic appearance of polycystic kidneys.

FURTHER DISCUSSION

DR. GEORGE W. HOLMES: The plate nearest me shows both kidney pelves injected. They are enormously increased in size. The picture is characteristic of polycystic kidneys, distortion of the calices without much dilatation of the pelvis itself, elongated major calices and occasionally elongated minor calices. The picture is that of masses in the kidney pressing on the pelvic area. The fact that it is bilateral helps considerably in the diagnosis. We occasionally have a single cystic kidney, but a single lesion such as this is usually due to hypernephroma or some other tumor in the kidney. Tumors are not likely to be bilateral, as this is.

Here is a plain film of the abdomen taken in an effort to show the kidney outlines. It is sometimes possible to show the kidneys on a film taken in this manner and perhaps make injection unnecessary. Another method of showing the kidney without catheterization is by injection of a dye into the blood stream. The dye is secreted by the kidney, and in that way we get an outline of the kidney pelves and of the kidneys themselves.

DR. CABOT: Why didn't they do that in this case?

DR. HOLMES: I suppose because the kidneys were not functioning well. Probably the dye would not have come through.

He had films taken of his chest. I should think they were negative. We can see a considerable difference in the size of the apices, the right being much larger than the left. That may be due to scoliosis. The lung fields are rather large, clear, the diaphragm low, and the heart shadow prominent in the region of the ventricles. In the lateral view we can see the depression in the front of the chest wall which was mentioned. I do not think this adds anything to the diagnosis.

DR. CABOT: Why did they take that lateral view?

DR. HOLMES: I don't see any special reason for it except to show the deformity of the chest, and that they already knew.

A STUDENT: Do you as a rule have high temperature in uremia?

DR. FREMONT-SMITH: Yes.

A STUDENT: As much as we get in this case?

DR. CABOT: I should say yes.

A STUDENT: Would it be likely to be less marked than in chronic nephritis with some degree of kidney insufficiency?

DR. FREMONT-SMITH: I do not know. I think the temperature does go up in uremia, but I do not know of any definite explanation for it. Of course with dehydration there is a rise in temperature and there is always the possibility of a secondary infection in a man as ill as this, a pericarditis and often a terminal pneumonia without any signs.

A STUDENT: How about leukocytosis?

DR. FREMONT-SMITH: I should say that in a terminal state of uremia we do get leukocytes and a temperature.

A STUDENT: That is, from the uremia itself?

DR. CABOT: I think just from the uremia itself.

A STUDENT: What are they referring to when they say "before operation"?

DR. FREMONT-SMITH: I think circumcision was the only operation he had. You would not call a cystoscopy an operation, from the point of view of the operator.

A STUDENT: Are vesicles characteristic of uremia?

DR. FREMONT-SMITH: I do not think they are. I have seen marked itching but I have never noticed vesicles.

A STUDENT: What is the cause of the anemia?

DR. FREMONT-SMITH: It is very frequent in the glomerular types of chronic nephritis. Occasionally we find anemia in vascular nephritis, but I think Dr. Mallory will bear me out that in almost all cases of glomerular nephritis there is anemia, and where we do not find it we wonder if we are right in making a diagnosis of glomerular nephritis.

A STUDENT: How about the diet as a cause?

DR. FREMONT-SMITH: We can get very marked states of anemia from poor nutrition, but here we have a very much more definite thing to attach it to. The cause must be a marrow inhibition due to the toxins that are not put out through the kidney.

A STUDENT: Is there any pain in uremia?

DR. FREMONT-SMITH: Usually none. Occasionally abdominal pain and vomiting occur.

A STUDENT: Is edema common in polycystic kidney?

DR. FREMONT-SMITH: I think whenever we get kidneys that do not put out water, whether they are normal kidneys that have been stopped by fever, by vasopressure, or are unable to secrete because of kidney pathology, if the person continues to take fluid, edema will appear.

CLINICAL DIAGNOSES (FROM HOSPITAL RECORD)

Bilateral polycystic kidney.
Uremia.

DR. MAURICE FREMONT-SMITH'S DIAGNOSES

Polycystic kidneys.
Uremia.

ANATOMIC DIAGNOSES

1. *Primary disease.*

Polycystic kidneys.

2. *Secondary or terminal lesions.*

Cyst of the spleen.

PATHOLOGIC DISCUSSION

DR. MALLORY: We found a pair of extremely large polycystic kidneys here, the pair weighing together 2100 grams, which would be considerably more than the normal sized liver. Almost every millimeter of kidney substance was involved, the cysts varying from two to three millimeters to two to three centimeters. Microscopically in between the cysts we could find an occasional glomerulus and an occasional tubercle here and there, but by and large there was very little kidney substance left, probably not a total of more than 30 grams of kidney substance.

The examination was limited to the abdomen. The only other thing we found was something very common in these cases—a small cyst in the spleen. Over 50 per cent of polycystic kidneys do show cysts in the liver or the spleen, usually the former.

The etiology is totally unexplained so far as we can see. Any theory that might be based on local changes in the kidney falls down in view of these very frequent multiple cysts in the spleen and liver.

DR. CABOT: Was the spleen enlarged?

DR. MALLORY: No.

DR. FREMONT-SMITH: Were the masses fairly symmetrical?

DR. MALLORY: The left was distinctly larger than the right.

A STUDENT: Is uremia a clinical diagnosis?

DR. MALLORY: Yes, there is no possible way of making the diagnosis anatomically except by inference. If we find any lesion which has destroyed more than 75 or 80 per cent of renal tissue we are almost certain that there has been uremia. It takes an immense amount of kidney destruction to give uremia. Certain other things also aid. If we find a pericarditis and an acute colitis, uremia becomes almost a certainty, but it always remains an assumption.

A STUDENT: What was the clinical diagnosis before the pyelogram was taken?

DR. MALLORY: It was polycystic kidneys. Making the diagnosis of polycystic kidneys depends wholly on thinking of it. It happens to have been the third case within a short time in this hospital, so they were thinking of it.

DR. CABOT: I think Dr. Mallory puts that exactly right. In the cases I have seen if we had thought of it at all the diagnosis was perfectly easy. The cysts are generally so big that if you think of it you feel them. If you do not think of it, no matter how big they are you do not feel them.

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ON EARTH PEACE, GOOD WILL TOWARD MEN

THESE words, resounding through the past eighteen centuries, have inspired faith in the hearts of multitudes of human beings and helped them to meet the innumerable complexities and disappointments of life. The sentiment originated with a belief in the coming of the Messiah whose immeasurable influence should foster the moral development of men and prove an available resource in time of trouble.

Though Christianity has not taken from the hearts of men the spirit of war, it has been a mighty power in molding the complexities of personal relationships and an important factor in the behavior of people in periods of distress. Even in this material age, with hatred and disturbance among nations, paeans of joy will pervade many regions and the Christmas spirit will dispel the gloom of the past three years.

History shows that civilized nations have overcome the cataclysms of war and great natural disasters and, although we have been passing through a period of trial beginning with the Great War and extending more or less continuously through the depression, there still exists in the hearts of brave and patient people the expectation of blessings yet to come. There is one great cause for rejoicing at this time in the almost universal improvement of the health and well-being of those who have not been cast into the depths of poverty and deprivation.

May we extend to our readers the hope that the Christmas spirit will prevail to the end that there shall be On Earth Peace, Good Will Toward Men.

WHY ARE SOME MEDICAL SCHOOLS "NOT RECOGNIZED?"

THE question may well be asked why some medical schools are "not recognized". The summary answer that they are not really educational institutions omits so many pertinent considerations that one's curiosity is aroused as to how such institutions came to exist. It would be interesting to review in detail the history of medical education in the United States since the beginning of the nineteenth century and to note the conditions in which medical schools were founded. In a country with rapidly extending frontiers, sometimes in sprawling fashion, with pioneer conditions a matter of but yesterday in many so-called settled communities, it was not to be expected that medical education would receive the planned attention that was given to it in the century old universities of Europe. There was a need for physicians; still more a need for well-trained physicians; established medical schools were remote from the vigorous life west of the Alleghanies; students were eager to learn and physicians eager to teach. The medical curriculum consisted of a course of lectures supplemented by a few demonstrations, and even anatomy was taught in this limited way. Although the names of William Harvey and John Hunter were not unknown, experimental science and formal medical education were not on speaking terms, and there were no laboratories. As there was even then a superabundance of information to be acquired by the student, the courses of lectures of the first year were repeated for the second year.

It was a simple and inexpensive matter to establish a medical school. A charter giving power to confer degrees in medicine was easily obtained from the legislature. A faculty, arranged by the well-known "settee" rather than the "chair" method, was quickly brought together, and students naturally gravitated to the center of learning. There was a real need and a striving to meet it, inadequately and often unintelligently. The result was a mushroom like growth of medical schools, of which the Directory of the American Medical Association lists over three hundred and fifty that have closed their doors.

It was immediately apparent that many of these institutions were not worthy of the name of medical school and recourse was had to statutory enactment for protection against uneducated graduates. The coming change in medical education was foreshadowed in some of the statutes of the '80's and a graduated course with progression from year to year extending over three years was introduced. In some states specific details as to content of curriculum were set forth in the law and only graduates of schools which met the statutory requirements were regarded as eligible for examination for licensure. Then it became clear that better preparation for the study of medicine was needed and college work of one, two, three or even four years in some schools was required. Now the minimum standard for admission to "recognized" schools is two years of college work in specified subjects.

To the demand for better medical education voiced by some legislatures, and by some medical educators and schools, and made necessary by the accumulating mass of medical knowledge, every medical school has been responsive, but in varying fashion. Some said frankly they could not meet the demands of the new age, and they preferred to close their doors honorably. Others combined their resources with similar or stronger schools, making one reasonably strong school in place of several weak institutions. Others with more adequate means at their disposal progressed steadily, often showing leadership in the general advance.

There remains, however, another small group of schools. Of these some are of recent growth, others have dragged on an existence from bygone days; but all, relative to the larger group, have gone backward. These are the schools, which, perhaps better than the worst of fifty years ago, are now so far behind the general line of educational advance, that they are not "recognized" as medical schools by some evaluating bodies. They are almost without equipment, their teaching staffs are weak, their laboratories are very inadequate and their clinical facilities are of the slimmest proportions. They cannot give modern scientific medical education. They are institutions caught by some eddy and held in some backwater, while the stream of progress has swept on.

Occasionally, as the law has revoked for fraud the charter of one or another of the decadent medical schools, sinister motives for their continued existence have come to light, so that a shadow has fallen on schools that are not "recognized". Of the inner workings of some of these institutions little is known. It would redound to their credit if they would invite investigation by evaluating bodies, if they would manifest a desire to be "recognized", and if they would make serious efforts to meet the need for better medical education.

INTERPRETATIONS OF THE WORK OF THE COMMITTEE ON THE COSTS OF MEDICAL CARE

ATTENTION is called to the address of Professor C.-E. A. Winslow on page 1138 of this issue which emphasizes the statements embodied in the final report of the Committee on the Costs of Medical Care.

The medical profession of the United States has been provided with a series of carefully compiled fact-finding reports and with flexible plans adapted to the variable conditions of American life, based upon these publications. The work was carried on by a competent staff of investigators and the results have been under consideration for many months by a group of 50 professional and lay persons, 24 of whom have the degree of Doctor of Medicine. The final report of the committee consists of a series of recommendations supported by a large majority of the committee, including 16 Doctors of Medicine, together with a dissenting statement signed by eight physicians and one layman.

This final report should be studiously considered, and acted upon by the medical profession. The public seems to be insistent that something be done about existing conditions. Says the Newark *News*, "the medical association or the individual doctor who dislikes the prescription is bound to offer something better or to be guarded in his criticism". "Does the medical profession," asks the Miami *News*, "plan to stand pat on the situation as it now stands—a combination of idle doctors and untreated sick?" The Lewiston (Idaho) *Tribune* warns us that "if the profession does not lead in the adoption of this or some other remedy there will be repeated an insistent demand for action by state and local governments". When the objections aroused by the committee's fair and constructive report have subsided, we are confident that the medical profession will assume a position of helpful leadership and that it will not be driven into a position of unreasoning opposition.

The recommendations of the committee are not "revolutionary". On the contrary, it is possible that the committee has saved the American people from a change in the provision of medical care which might quite properly have been termed "revolutionary". Most countries in Europe and some in other parts of the world have adopted, during the past half century, systems of compulsory state illness insurance. Before the War, state insurance was proposed and considered in some eight or ten commonwealths in the United States and much public sentiment had developed in its favor. If the War had not come, the protagonists of this system of medicine would probably have become increasingly active in urging its consideration and some of the states might have adopted it before now.

A doctor of international reputation in one of our leading medical schools writes "this moment strikes me as a critical moment for the profession in the United States. We all know how the profession in Great Britain lost prestige at the time the Medical Insurance Act was under discussion in England. By refusing to consider the facts of the situation at the time and to bring forth a proposal which was in consonance with the traditions of the profession, the profession in my opinion lost a wonderful chance to show its good sense and wise judgment. In time it had to accept not a scheme of its own making but a scheme thrust upon it by the politicians. Are we not running into a similar danger just now?"

Those who fear especially the growth of "state medicine" should welcome the committee's recommendations. Surprising though the fact may be to many persons, today approximately 75 per cent of all hospital service is furnished by governmental institutions. The committee suggests that the present tendency to extend the functions of the voluntary hospitals be encouraged and that it be made the basis for the development of centers from which all types of medical care properly organized may be made available to the people. If the voluntary hospitals and the doctors connected with them now assume leadership, there should be relatively less "state medicine" than at present rather than more.

Those who read the report may trust its framers to interpret it. It will be seen that the importance of the personal relation between the patient and practitioner is recognized and repeatedly emphasized. The recommendations of the main report definitely provide for its preservation. The report safeguards many other essential interests of both physician and patient. The committee has done its work thoroughly and has given due consideration to these matters.

The problem is difficult and complicated. It calls for intelligent thinking and careful painstaking study, rather than for emotionalism. Dr. Ray Lyman Wilbur well said in his address in New York, "We cannot wisely carry forward the fears and the shibboleths of the past in facing the social and economic forces of the day. Issues must be faced and not avoided by repeating the outworn slogans. 'Contract practice' and 'state medicine' must be redefined and 'debogie-ized'. Waving scarecrows only disturb the unthinking." Finally, we cannot escape the truth in Doctor Wilbur's warning, "The doctor must recognize that whether he likes it or not, something is going to be done. It is better to have it done by him than to him."

That there should be honest dissent from the findings of the Committee is desirable, but it is reasonable to expect that bitter recrimination will not be the resource of the objector. There should be no personal quarrel in the medical family.

A WARNING TO HOSPITALS

It is a distinct shock to our sense of pride in Massachusetts medical practice to receive a copy of a letter again warning hospital superintendents of the necessity of typhoid immunization for nurses. Several months ago the death of a non-immunized student nurse from a typhoid infection, presumably contracted in line of duty, prompted the State Department of Public Health to warn all hospitals of the vital importance of this protection for the nursing staff. In at least two hospitals this timely warning went unheeded, with the result that two more nurses, likewise unprotected, have fallen victims of the disease.

In his monograph on typhoid fever printed in 1873, William Budd made touching reference to "the devotion of some poor neighbor who in too many cases paid the penalty of her kindness in becoming, herself, the victim of the same disorder". It was no unusual event in those days for the nurse to contract typhoid from the patient. To care for a case of the disease constituted a distinct hazard to the attendant, for secondary cases and deaths were not infrequent. With the advent of typhoid vaccine, it became possible to protect against such an event. Typhoid immunization of nurses has become an established practice in hospital management, with a resultant virtual disappearance of such secondary cases. It is surprising, therefore, to learn that certain hospitals are still unmindful of their responsibility in thus protecting their nurses. However much we may wonder at the apathy of certain parents in not obtaining the benefits of various preventive procedures for their children, we must wonder even more at such neglect within a group which should be educated to the appreciation of the value of modern preventive medicine.

THIS WEEK'S ISSUE

Contains articles by the following named authors:

Cheever, David. A.B., M.D. Harvard University Medical School 1901. F.A.C.S. Associate Professor of Surgery, Harvard Medical School. Surgeon, Peter Bent Brigham Hospital. His subject is "Operative Evacuation of the Small Intestine in Paralytic Stasis." Page 1125. Address: Peter Bent Brigham Hospital, Boston.

Saklad, Meyer. M.D. Tufts College Medical School 1924. Anesthetist, Providence Lying-In, Miriam, Charles V. Chapin, Rhode Island Hospitals, Providence, R. I., and Memorial Hospi-

tal, Pawtucket, R. I. His subject is "Oxygen and Carbon Dioxide Therapy." Page 1132. Address: 2 Euclid Avenue, Providence, Rhode Island.

WINSLOW, C.-E. A. Dr.P.H. Vice-Chairman of the Committee on the Costs of Medical Care and Professor of Public Health, Yale School of Medicine. His subject is "The Recommendations of the Committee on the Costs of Medical Care." Page 1138. Address: Yale University, New Haven, Connecticut.

SCARCELLO, NICHOLAS S. M.D. Tufts College Medical School 1930. Former Interne at The Cambridge Hospital. Senior Resident at The Evangeline Booth Maternity Hospital. Teaching Fellow in Obstetrics at Tufts College Medical School. At present Graduate Assistant at The Worcester City Hospital. His subject is "Luminal in Controlling the Restlessness from Sodium Amytal in Obstetrics." Page 1142. Address: 27 Elm Street, Worcester, Massachusetts.

RUDY, ABRAHAM. A.B., M.D. University of Berlin, Germany 1923. Assistant in Medicine, Beth Israel Hospital. Teaching Assistant in Medicine, Tufts College Medical School. His subject is "Severe Thallium Acetate Intoxication Caused by the Use of a Depilatory Called 'Koremlu.'" Page 1151. Address: 311 Commonwealth Avenue, Boston.

MISCELLANY

A RADIO MESSAGE PREPARED AND SPONSORED BY THE COMMITTEE ON PUBLIC EDUCATION OF THE MASSACHUSETTS MEDICAL SOCIETY FOR THE DEPARTMENT OF PUBLIC HEALTH

SOME FACTS WORTH KNOWING ABOUT YOUR HEART*

BY JAMES M. FAULKNER, M.D.

Heart disease has had a good deal of publicity in the last few years. Everyone has heard that it has outstripped tuberculosis and cancer as a cause of death in the United States. The realization has become general that rheumatic fever practically always means heart trouble and now the mention of St. Vitus' dance does not always provoke a laugh. The spread of this important information throughout the community has already done much to prevent the chronic invalidism and early death which may result from ignorance and neglect. Pains in the legs in children are not lightly dismissed as "growing pains" and the fidgety, inattentive little girl who drops the dishes is not scolded—she is taken to the doctor.

One does not, however, get a fair picture of what the heart can do if one hears only of its shortcomings. Furthermore, one is inclined to interpret sensations from the heart all too seriously if one thinks of the heart only in terms of disease. It seems worthwhile, therefore, to use these few minutes to show you the other and brighter side of the picture.

I want to show you that instead of being a delicate organ, liable to give out under any undue strain, the heart is one of the strongest and toughest organs in the body. It has been provided by nature with an enormous reserve force; a reserve so powerful that it can protect the healthy heart against the strain of the most violent exertion and which allows the heart to carry on a normal circulation for long periods in spite of the handicap of damaged heart valves or high blood pressure.

The normal heart of a person lying down at rest puts out about half a tumblerful of blood with each heart beat and in the course of a minute it puts out a gallon and a half. Under the stress of violent exertion such as running at top speed, the heart is capable of putting out twice as much at each beat and seven times as much or ten gallons per minute. This is equivalent to having every drop of blood in the body pass through the heart about seven times per minute. If our banks held such reserves as this against times of stress, we would have very few bank failures.

Now the question naturally comes up, "How can this little bag of muscle, the heart, which only weighs about ten ounces, keep up this extraordinary amount of work hour after hour, day and night, day in and day out?" One would think it would soon get exhausted. As a matter of fact, the heart snatches a brief period of complete rest after each beat, in which it relaxes completely and builds up its energy again for the next beat. In fact, when a person is resting, the heart is actually working only one-half to three-quarters of the time. It is on a twelve to eighteen hour day, so to speak. As soon as a person starts exercising the heart has to speed up in order to carry the extra amount of blood which is demanded by the muscles. The speeding up takes place at the expense of the rest period so that the peculiar state of affairs is brought about that the harder the heart is working the less rest it gets. Eventually, of course, a point is reached at which the heart is not getting enough rest and cannot work efficiently, but it never quits merely because more is asked of it than it can do. It carries on as best it can until the person is obliged to rest by reason of getting completely out of breath or from muscular fatigue. The healthy heart does not fail no matter how much strain we put on it by exercise.

This brings us to the problem of the so-called "athletic heart". There is a widespread belief that strenuous physical exercise such as rowing or long distance running throws an undue strain on the heart causing it to enlarge and predisposing its possessor to heart disease and early death. First let us take up the question of enlargement of the heart from strenuous athletics. This idea dates back to the days before we had really exact methods of

*Station WBZ, October 25, 1932, 4:15 P. M.

measuring the size of the heart. Since the advent of accurate x-ray measurements of the heart, this view has had to be practically abandoned. Several years ago a careful study was made of the hearts of twenty of the Marathon runners in the Ashland to Boston race. X-ray measurements of the heart were taken before the race and immediately after the finish. These men, many of whom had been running in Marathon races for years, showed no enlargement of the heart and their hearts were a little smaller at the finish than they were at the start. Such observations as these have been confirmed many times by other investigators and the diagnosis of athlete's heart is no longer made in the clinics.

As for the bugaboo that men who were strenuous athletes in college were apt to die young, a great mass of statistics on this point has been gathered and no evidence has come out of it which would make a life insurance company any more hesitant about issuing a policy to a former member of the football team than to a former member of the debating team.

My remarks up to now must be understood to apply only to healthy young people. For them the danger of heart strain from overexertion does not exist, but for older people who are out of training it is quite a different matter. Advancing years and lack of exercise may cut down the reserve force of the heart to very narrow limits and the office worker of fifty with flabby muscles who attempts a long distance swim or a high mountain climb is running a real risk. All people when they reach the age of forty should make up their minds to one of two modes of life. They should plan either to keep in good physical training by regular exercise or to pocket their pride and refrain from anything more strenuous than golf. Occasional, violent exercise is far worse than none at all.

Now a word as to the effect of tobacco on the heart. There is no doubt in the mind of any athletic trainer that smoking cuts down a man's wind. This is largely due to its effect not on the heart muscle itself but on the nerves which control the rate of the heart beat. Smoking tends to accelerate the heart rate. This is noticeable at rest, but is exaggerated by exercise. It is something like taking the governor off an engine; it makes it run faster but less efficiently. Thus the habitual smoker may find his heart racing wildly after a bout of exercise which would not faze him were he in training. There is no evidence that smoking does any permanent damage to the heart or that it predisposes the heart to other forms of heart disease. Excessive smoking may produce an irregularity of the heart known as premature beats. These premature beats often pass entirely unnoticed by the individual exhibiting them, but some people are painfully aware of their presence. They often describe them as a feeling as if the heart flopped over in the chest. Excessive use of tea or coffee sometimes causes the same irregularity in susceptible individuals. This irregularity is merely a sign of an irritable heart and does not mean heart disease.

Another very common finding in the heart is the presence of a murmur. It is important to remember that by no means all heart murmurs mean heart disease. In fact, a large percentage of normal persons have faint heart murmurs if they are carefully listened to. In the vast majority of cases it is possible for a competent physician to distinguish between a murmur which is significant and one which is not.

Leaky valves cause characteristic murmurs which are usually readily recognizable by the physician. The term is perhaps an unfortunate one because it is apt to call up in the mind of the patient the picture of a sinking ship in which leaky pumps cannot keep pace with the rising water level. The sufferer from valvular disease of the heart should know that nature is doing a great deal to overcome this handicap. The heart enlarges in order that it may put out the extra amount of blood which is required to make up for that which leaks by the valve. In a large number of cases, nature takes care of this so well that the victim is able to carry on a normal life for many years.

In closing may I repeat that the heart as the most vital organ in the body has been protected by nature with most powerful reserve force. While we are young and healthy it is almost impossible to overstrain the heart by severe exercise. On the other hand, when we are middle-aged and out of training, we should not ask too much of it. The effect of tobacco on the heart is practically negligible except for those who are competing in strenuous athletics. Even the burden of defective valves is to a large extent compensated for by increase in the size of the heart.

A CHRISTMAS SEAL SALE

The New York Tuberculosis and Health Association through its president, Dr. Linsly R. Williams, reports that the Christmas seal sale in that city is especially disappointing in that the returns are the lowest that have ever been known and that it will be necessary to make more definite pleas for a contribution if the fund is to amount to anywhere near normal. This has been shown by the fact that whereas the goal has been $300,000 for that city, thus far only $96,939 have been contributed. This is more than 35 per cent less than the normal returns of about $150,000 at this time.

It is pointed out that the results depend not so much upon large individual donations as upon thousands of dollar contributions from people of average income and it is this group that has been hard hit financially and so a great part of the usual donations are lost.

Reports from Massachusetts at the present time show that the deficit in several of the districts amounts already to over 18 per cent, which is considered to be fairly encouraging as compared with the larger deficit in New York City.

A STUDY OF INFANT MORTALITY IN BOSTON FOR 1931

The Boston Health League has completed a study of infant mortality in Boston for 1931 by census tracts and health areas. This is the second study of this kind and the infant mortality figures for 1930 are available in the August 4, 1932 issue of the *New England Journal of Medicine*. It is of special interest to learn that the infant mortality rate of the city, 59.4, is the lowest on record.

Of the total number of infant deaths, 32.5% occurred the first day, 24.2% the first month and 43.2% after the first month.

East Boston—There is again wide variation in the infant mortality rates for the various tracts with the rate for this health area 9.6 above the city rate.

Charlestown—Has a particularly high rate, 114.5, and attention is again called to this congested district.

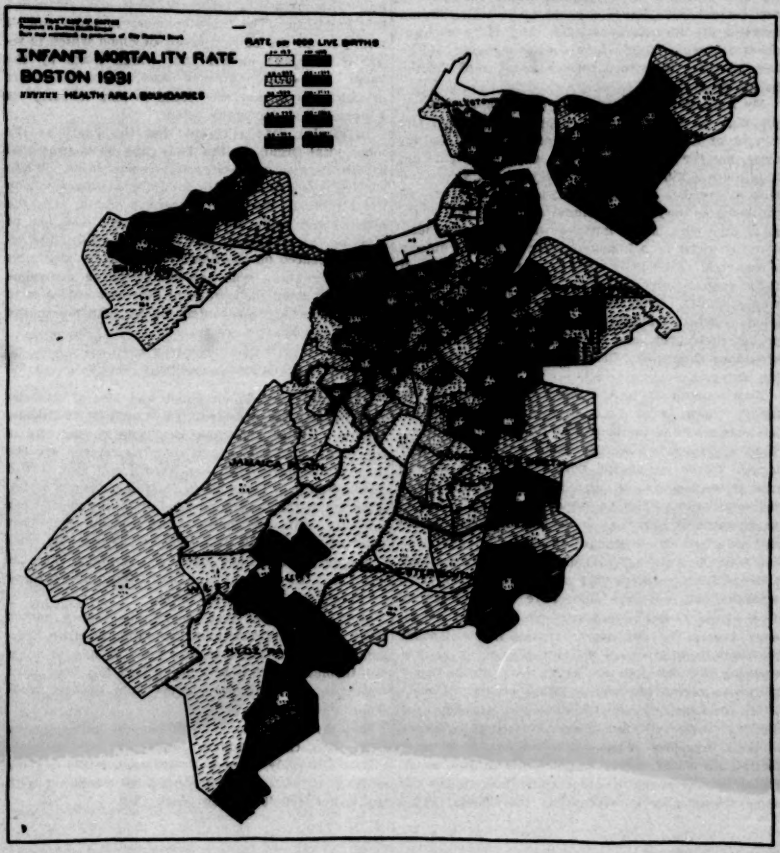
South Boston, Dorchester North—These two districts continue to have high rates in certain tracts.

South End—The total infant mortality rate for this area, 72.7, is above the city rate. L-2 and L-3 contain a large number of Negroes, while I-4 and L-5 contain first and second generation Syrian, Canadian and Irish.

Still Births—R-1, R-3, U-2, 3, 4, 5 and 6, all in the Roxbury health area, contain a large number of still births, as well as X-6 in Dorchester South.

West Roxbury—In this area there were 33 live births and 32 still births, which is unduly high.

No final conclusions can be drawn from this series for two years but the rates continue to be higher in the congested areas, which may indicate poor living conditions or insufficient obstetrical care.



Boston Health League

Resident Births, Still Births, Infant Deaths and Infant Mortality Rates for 1931 Distributed by Health Areas and Census Tracts

Census Tract	Births	Deaths Under One Year	Infant Mortality Rate	Still Births	First Day	First Month	After First Month
City Totals	12,975	772	59.4	403	251	187	334
East Boston							
A-1	92	4	43.4	2	2	1	1
A-2	87	6	68.9	1	4	2	—
A-3	136	9	66.2	5	2	4	3
A-4	99	5	50.5	3	1	2	2
A-5	150	10	66.6	2	3	2	5
A-6	148	13	87.8	3	4	3	6
B-1	80	6	75.1	3	—	1	5
B-2	83	6	72.2	6	1	1	4
B-3	71	9	126.0	5	3	1	5
B-4	86	5	58.1	1	2	—	3
B-5	196	13	66.3	7	1	3	9
Totals	1,228	86	70.0	38	23	20	43
Charlestown							
C-1	33	7	212.1	3	2	3	2
C-2	53	5	94.3	4	—	2	3
C-3	83	9	108.4	4	2	3	4
D-1	21	—	—	1	—	—	—
D-2	28	1	35.7	2	—	—	1
D-3	53	8	150.9	3	—	4	4
D-4	60	5	83.3	4	1	3	1
E-1	76	7	92.1	2	2	2	3
E-2	47	10	212.7	2	4	1	5
Totals	454	52	114.5	25	11	18	23
North End							
F-1	103	10	97.0	2	3	1	6
F-2	111	4	36.0	4	—	2	2
F-3	28	3	107.1	1	1	—	2
F-4	132	12	90.9	4	1	4	7
F-5	71	7	98.5	3	—	—	7
F-6	16	1	62.5	1	1	—	—
Totals	461	37	80.2	15	6	7	24
West End							
H-1	160	8	50.0	3	4	2	2
H-2	52	—	—	—	—	—	—
H-3	30	1	33.3	—	1	—	—
H-4	92	3	32.6	1	1	—	2
K-1	65	—	—	1	—	—	—
K-2	41	1	24.3	1	—	1	—
Totals	440	13	29.5	6	6	3	4
Back Bay							
K-3	15	—	—	—	—	—	—
K-4	96	9	93.7	2	7	—	2
K-5	21	—	—	1	—	—	—
J-3	25	2	80.0	2	1	1	—
J-4	38	4	105.2	2	1	2	1
J-5	64	5	78.1	5	1	2	2
S-1	78	7	89.7	1	3	2	2
Totals	337	27	80.1	13	13	7	7
South End							
G-1	28	2	71.4	4	1	—	1
G-2	39	2	51.2	1	—	—	2
G-3	6	—	—	—	—	—	—
G-4	8	—	—	—	—	—	—
I-1	39	2	51.2	—	—	—	2
I-2	97	8	82.4	6	3	—	5
I-3	67	3	44.7	1	—	1	2
I-4	61	8	131.1	1	2	1	5
J-1	51	3	58.8	2	1	1	1
J-2	35	2	57.1	—	2	—	—
L-1	56	1	17.8	4	1	—	—
L-2	81	8	98.7	4	1	4	3
L-3	58	6	103.4	—	1	4	1
L-4	35	2	57.1	—	1	1	—
L-5	44	6	136.2	1	2	2	2
L-6	53	3	56.6	1	—	1	2
Q-1	39	2	51.2	1	—	1	1
Totals	797	58	72.7	26	15	16	27
South Boston							
M-1	56	3	53.5	1	—	2	1
M-2	65	7	107.6	4	1	—	6
M-3	52	2	38.4	2	—	—	2
M-4	40	3	75.0	2	—	1	2
N-1	157	12	76.4	6	1	1	10
N-2	98	3	30.6	—	—	1	2
N-3	69	3	43.4	1	—	1	2
N-4	92	3	32.6	4	1	—	2
O-1	151	12	79.4	8	1	2	9
O-2	97	7	72.1	2	2	—	5
O-3	87	9	103.4	2	1	3	5
O-4	29	3	103.4	1	—	2	1
P-1	93	9	96.7	2	5	2	2
Totals	1,086	76	69.9	35	12	15	49
Roxbury							
Q-2	108	10	92.5	3	3	3	4
Q-3	72	3	41.6	1	1	1	1
Q-4	75	6	80.0	—	3	1	2
R-1	146	7	47.9	8	1	2	4
R-2	68	13	191.0	3	6	1	6
R-3	76	9	118.4	7	3	1	5
S-2	60	3	50.0	1	1	1	1
S-3	97	7	72.1	5	—	1	6
S-4	80	4	50.0	2	1	2	1
S-5	92	3	32.6	2	2	—	1

S-6	73	12	164.3	3	7	—	5
U-1	104	3	28.8	—	—	2	1
U-2	129	5	38.7	6	2	1	2
U-3	98	6	61.2	6	4	—	2
U-4	137	6	43.7	4	1	1	4
U-5	144	6	41.6	5	4	1	1
U-6	214	4	18.6	4	2	—	2
V-1	90	5	55.5	1	1	2	2
V-2	112	6	53.5	3	1	2	3
Totals	1,975	118	59.7	64	43	22	53

Dorchester North

P-2	94	7	74.4	1	4	—	3
P-3	68	4	58.8	—	2	1	1
P-4	71	3	42.2	1	1	1	1
P-5	78	4	51.2	5	1	1	3
P-6	77	5	64.9	—	2	1	2
T-1	84	4	47.6	—	2	1	1
T-2	116	11	94.8	3	2	4	5
T-3	137	11	80.2	8	3	3	5
T-4	171	7	40.9	5	2	1	4
T-5	231	7	30.3	5	4	1	2
T-6	101	6	59.4	2	2	1	2
T-7	201	9	44.7	3	3	5	1
T-8	160	7	43.7	4	1	2	4
T-9	79	3	37.9	3	3	—	—
T-10	41	2	48.7	1	—	—	2
X-1	158	13	82.2	8	2	2	9
Q-5	182	4	21.9	5	—	1	3
Totals	2,049	107	52.2	54	35	25	47

Dorchester South

X-2	197	9	45.6	5	2	2	5
X-3	192	12	62.5	—	4	2	6
X-4	236	13	55.0	9	6	3	4
X-5	313	11	35.1	6	7	3	1
X-6	329	16	48.6	13	7	6	3
Totals	1,267	61	48.1	33	26	16	19

Jamaica Plain

V-3	67	6	89.5	3	2	—	4
V-4	86	2	23.2	1	1	—	1
V-5	121	5	41.3	—	4	1	—
V-6	125	2	16.0	3	1	—	1
W-1	208	11	52.8	3	6	4	1
W-2	125	6	48.0	3	4	1	1
Totals	732	32	43.7	13	18	6	8

West Roxbury

W-3	179	4	22.3	7	1	—	3
W-4	187	13	69.5	4	6	2	5
W-5	134	4	29.8	7	2	1	1
W-6	269	12	44.6	14	5	4	3
Totals	769	33	42.9	32	14	7	12

Hyde Park

Z-1	292	19	64.8	9	9	7	3
Z-2	143	5	34.9	5	—	4	1
Totals	436	24	55.0	14	9	11	4

Brighton

Y-1	112	10	89.3	3	5	2	3
Y-2	101	6	59.4	7	2	2	2
Y-3	238	9	37.8	8	4	3	2
Y-4	156	10	64.1	6	4	2	4
Y-5	337	13	38.5	6	5	5	3
Totals	944	48	50.8	30	20	14	14

NOTE:—All births have been allocated to the residence of the mother, and all infant deaths to the residence of the decedent.

In the Sixtieth Annual Report of the Health Department of the City of Boston for the year 1931 it is stated that the closing date for births was April 1, 1932, and that the total resident births on that date were 12,869. The total resident births were 12,975 when the records were checked during August and September, 1932. Our resident infant mortality rate, therefore, is 59.4, which is slightly below the resident infant mortality rate published by the City Health Department of 60, which is the lowest infant mortality rate on record for the City of Boston.

GRADUATES OF THE TRAINING SCHOOL FOR ATTENDANT NURSES

At the recent graduating exercises of the Training School for Attendant Nurses, seventy-five young women were given Household Nursing diplomas at the Copley Methodist Church, Newbury Street. Dr. Henry Jackson was the principal speaker.

THE LONG RECORD OF THE MASSACHUSETTS EYE AND EAR INFIRMARY

The Massachusetts Eye and Ear Infirmary, 243 Charles Street, Boston, is now observing its 108th anniversary. The Infirmary had its inception in 1824 under the inspiration of Dr. Edward Reynolds and Dr. John Jeffries who established a free clinic for the treatment of the eye in the Scollay Building, Scollay Square. This is the second oldest institution of its kind in the United States, the New York Eye and Ear Infirmary having been founded in 1820.

The Massachusetts Eye and Ear Infirmary has had a remarkable history. Last year 99,234 people received treatment and of this number 91,566 visited the out-patient department. The work of the Infirmary has increased during the past year apparently due to some extent to the economic depression which has made it necessary for an increased number of indigent patients to apply for service. Although the strictest economy has been employed in carrying on the work, the Infirmary

is still facing a deficit which it is hoped will be met by generous benefactors. Dr. F. A. Washburn is now in his eighteenth year as Director of this Infirmary.

HARVARD MEDICAL SCHOOL APPOINTMENTS

The following appointments have been voted by the Corporation:

For one year from September 1, 1932:

George Kenneth Mallory, M.D., Instructor in Pathology.

Robert Alexander Gregory, M.D., C.M., Assistant in Neurology.

Danella Straup-Cope, Ph.D., Research Fellow in Physical Chemistry.

Rodolfo Margaria, M.D., Research Fellow in Physiological Chemistry.

Jost Michelsen, M.D., Research Fellow in Medicine.

Eugene de Thurzo, M.D., Research Fellow in Neuropathology.

Clifford Ladd Prosser, Ph.D., Research Fellow in Physiology.

Eugene Francis McCarthy, A.M., Fellow in Ophthalmic Research.

Wyman Whittemore, M.D., Associate in Surgery, Courses for Graduates.

From November 1, 1932 to September 1, 1933:

Charles Hazard Kimberly, M.D., Research Fellow in Psychiatry.

Dudley Merrill, M.D., Assistant in Medicine.

Theodore Cary Pratt, M.D., Assistant in Surgery, Courses for Graduates.

From January 1, 1933 to September 1, 1933:

John Dunham Stewart, M.D., Assistant in Surgery.

CITY HOSPITALS IN NEW YORK TO OUST 800 ALIEN EMPLOYES; CITIZENS WILL REPLACE THEM AT LOWER WAGES

Commissioner of Hospitals J. G. William Greeff confirmed reports recently that he had ordered all nurses, orderlies, helpers and other paid employes in the city's twenty-seven hospitals who are not American citizens to quit their jobs by December 15 or as soon thereafter as the department can investigate their citizenship status.

Dr. Greeff said that this move was part of the general economy plan in all city departments and was expected to save an additional $300,000 to $400,000 besides the $1,500,000 already cut from the Hospital Department's budget.

He announced that from 800 to 1,000 persons probably would be affected. Some would not be replaced, he said, and others would be replaced by American citizens at lower rates of pay than received by the incumbents.

From thirty to forty employes who are not American citizens have already been "eliminated," according to Dr. Greeff. He said that disposition of cases in which first papers had been taken out would depend on the length of time since the papers had been taken out, each case being treated on its merits and some exceptions being made.

First Deputy Commissioner James H. Fay, acting on Dr. Greeff's orders, called all the city hospital superintendents together at Bellevue Hospital and notified them to investigate and report on all citizenship cases immediately. The hospital superintendents notified the day and night shifts of employes to get ready for the change. — *New York Times.*

MIDDLESEX COLLEGE ASKING FOR LEGISLATION

A bill to provide for authority to grant the degree of Doctor of Dental Medicine has been filed at the State House by Horatio S. Card who evidently represents the Middlesex College. This is a matter for the State Dental Society to take cognizance of.

INFLUENZA

Although a very marked increase in influenza in the West and South has been noted, according to the Public Health Service Reports, New England has thus far escaped with a very small proportion of cases. The greater number of cases in the South seem to be in Alabama where 1,940 cases have been reported. Louisiana, Arizona and California all seem to be suffering from the epidemic.

SENTIMENT FOR INCREASING THE BIRTH RATE

At a recent meeting of the students of Wheaton College engaged in study in the sociology department, attention was concentrated on the birth rate in Massachusetts at the present time. These students were induced to study the birth rate of their ancestors over three generations and found that the average number of children was 4.9 and that the rate lessened in the succeeding generations until their immediate mothers had an average of but 2.5 children. These students came to an agreement that the example of their great-grandmothers should be followed and that they themselves would try to rectify the situation by having four children each "if and when the depression is over".

ACTIVITIES OF ANTI-VIVISECTION SOCIETIES

Recent reports from various sections of the country show that anti-vivisection societies are especially active in preparing appeals to further the prevention of the use of animals for study by physicians. The growth of this movement has been shown by increased membership and publicity. It is even claimed that the use of dogs, in demonstrations of methods which may be applied in the treatment of disease, is unconstitutional in at least one State, that of California.

RÉSUMÉ OF COMMUNICABLE DISEASES IN MASSACHUSETTS FOR NOVEMBER, 1932

Scarlet fever still continues the increased prevalence begun over a year ago.

Chicken pox is also quite prevalent for this time of the year.

Anterior poliomyelitis is showing the lowest number of cases ever recorded since reporting began.

Diphtheria, typhoid fever, tuberculosis, both pulmonary and other forms, have again made new low records for the month of November.

There has been no increased reporting of influenza, which has been on the increase in other parts of the United States.

Whooping cough, measles and German measles are somewhat lower than expected for this season.

The lowest number of cases of lobar pneumonia ever reported for November has been recorded this month.

Mumps and epidemic cerebrospinal meningitis occurred about the number of times expected.

RARE DISEASES

Actinomycosis was reported from Milton, 1.

Anterior Poliomyelitis was reported from Cambridge, 1; Dighton, 1; Hudson, 2; Total, 4.

Dysentery was reported from Medfield, 22 (State Hospital); Plymouth, 2; Total, 24.

Epidemic Cerebrospinal Meningitis was reported from Cambridge, 1; Lawrence, 2; Leominster, 1; Newton, 1; Revere, 1; Salem, 1; Somerville, 1; Whitman, 1; Out of State, 1; Total, 10.

Pellagra was reported from Boston, 1.

Septic Sore Throat was reported from Boston, 8; Concord, 1; Lowell, 1; Malden, 1; Saugus, 3; Somerville, 1; Total, 15.

Tetanus was reported from Boston, 1.

Trachoma was reported from Watertown, 1; Worcester, 2; Total, 3.

Undulant Fever was reported from Attleboro, 1.

MONTHLY REPORT OF CERTAIN COMMUNICABLE DISEASES

	Cases in Entire Population				Case Rates per 100,000 Population		
	November 1932	November 1931	Prosodemic Index*	Epidemic Index†	November 1932	November 1931	Expected Rates‡
All Causes	5231	5423	—	—	121.7	126.8	—
Anterior Poliomyelitis	4	56	40	.1	.1	1.3	.9
Diphtheria	160	240	443	.4	3.7	5.6	10.3
Epidemic Cerebrospinal Meningitis	9	12	7	1.3	.2	.3	.2
Measles	279	390	1154	.2	6.5	9.1	27.0
Pneumonia, Lobar	191	241	266	.7	4.4	5.6	6.2
Scarlet Fever	1039	903	883	1.2	24.2	21.1	20.5
Tuberculosis, Pulmonary	299	349	325	.9	7.0	8.2	7.6
Typhoid Fever	12	14	20	.6	.3	.3	.5
Whooping Cough	396	474	706	.6	9.2	11.1	16.5
Chicken Pox	1127	487	—	—	26.2	11.4	—
German Measles	25	66	—	—	.6	1.5	—
Gonorrhea	511	559	—	—	11.9	13.1	—
Influenza	14	19	—	—	.3	.4	—
Mumps	353	627	—	—	8.2	14.7	—
Syphilis	310	326	—	—	7.2	7.6	—
Tuberculosis, Other Forms	32	47	—	—	.7	1.1	—

*This index is an attempt to estimate the number of cases based on the trend during the past years which can be expected to occur, and is for the purpose of comparison with the number of cases which actually did occur.

†This ratio expresses how prevalent the disease is compared with the index mentioned above; 1.0 indicates that the actual number of cases equals the expected number. A larger number means a greater prevalence, and a smaller number a lesser prevalence than expected. Thus 2.0 would indicate twice the expected number, and .5 half the expected number of cases. The method used to determine the indices is described in the August 18, 1927 issue of the *Boston Medical and Surgical Journal*.

‡Calculated from the Prosodemic Index.

DECLINE IN THE QUALITY OF TYPHOID GERMS

It is reported that Dr. Francis B. Grinnell of Harvard Medical School has found that the old strain of typhoid germs which has been used to make protective vaccine for millions of individuals since 1903 is beginning to lose its virulence. The strain which has been used in practically all of the anti-typhoid vaccine in America and England is descended from germs taken from a British soldier who died of typhoid fever during the Boer War in 1903. These germs were especially selected because of their adaptation to the production of vaccine and are known as the "Rawlins strain." Millions of American and British soldiers were protected against typhoid by the use of these original Boer War germs. Bactericidal tests now indicate that the Rawlins culture is far inferior to the smooth strain which is the more virulent type and it would seem suitable therefore to substitute it for the old Rawlins strain if we are to get the maximum protection from our anti-typhoid vaccines.

CORRESPONDENCE

A CORRECTION OF A STATEMENT RESPECTING GOUT IN HOSPITAL RECORDS

Peter Bent Brigham Hospital
721 Huntington Avenue, Boston
December 14, 1932.

Dear Mr. Editor:

In the *New England Journal of Medicine* for November 17, 1932 on Page 910 in the report of the meeting of the Harvard Medical Society the following sentence appears: "It was remarked that this is the first typical case of gout in the hospital records since the advent of prohibition." This is an error. Gout is a condition which is admitted to the medical wards of the Peter Bent Brigham Hospital at about the average rate of 3 or 4 per year, there being admitted in 1924 8 cases, 1925 3, 1926 1, 1927 0, 1928 1, 1929 3, 1930 0, 1931 5. I am making the correction in order that there be no perpetuation of the idea indicated by the sentence that I have quoted.

Very truly yours,
HENRY A. CHRISTIAN, M.D.

ARTICLES ACCEPTED BY THE AMERICAN MEDICAL ASSOCIATION COUNCIL ON PHARMACY AND CHEMISTRY

535 North Dearborn Street, Chicago, Ill.,
November 26, 1932.

Managing Editor,
The *New England Journal of Medicine*,

In addition to the articles enumerated in our letter of October 29, the following have been accepted:

Lakeside Laboratories, Inc.
Ampoules Dextrose (d-Glucose) 25 Gm., 50 cc.

Lederle Laboratories, Inc.
Neocinchophen—Lederle
Tablets Neocinchophen—Lederle, 5 grains

Mead Johnson & Company
Mead's Viosterol in Halibut Liver Oil 250 D

H. A. Metz Laboratories, Inc.
Tablets Novocain, 1 grain
Tablets Novocain 0.01 Gm. with L-Suprarenin Synthetic Bitartrate 0.2 mg.
Ampules Novocain Solution 2 per cent with L-Suprarenin Synthetic Bitartrate, 1 cc.
Ampules Novocain Solution 2 per cent with L-Suprarenin Synthetic Bitartrate, 3 cc.
Ampules Novocain Solution 2 per cent with L-Suprarenin Synthetic Bitartrate, 5 cc.
Ampules Sterile Crystals Novocain for Spinal Anesthesia, 50 mg.
Ampules Sterile Crystals Novocain for Spinal Anesthesia, 100 mg.
Ampules Sterile Crystals Novocain for Spinal Anesthesia, 120 mg.
Ampules Sterile Crystals Novocain for Spinal Anesthesia, 150 mg.
Ampules Sterile Crystals Novocain for Spinal Anesthesia, 200 mg.
Ampules Sterile Crystals Novocain for Spinal Anesthesia, 300 mg.
Ampules Sterile Solution Novocain 20 per cent, 5 cc.
Ampules Sterile Solution Novocain 20 per cent with L-Suprarenin Synthetic Bitartrate, 5 cc.
Ampules Novocain Solution 1 per cent, 2 cc.
Ampules Novocain Solution 1 per cent with L-Suprarenin Synthetic Bitartrate, 2 cc.
Ampules Novocain Solution 1 per cent with L-Suprarenin Synthetic Bitartrate, 6 cc.
Ampules Novocain Solution 2 per cent with L-Suprarenin Synthetic Bitartrate, 1 cc.
Ampules Novocain Solution 2 per cent with L-Suprarenin Synthetic Bitartrate, 3 cc.
Novocain and L-Suprarenin Synthetic Bitartrate Hypodermic Tablets "K"
Ampules Ephedrine-Novocain Solution, 1 cc.

Riedel-de Haen, Inc.
Nostal
Nostal Tablets, 0.1 Gm. (1½ grains)

Yours very truly,
PAUL NICHOLAS LEECH, *Secretary*,
Council on Pharmacy and Chemistry.

MEMBERS OF THE JOINT CONGRESSIONAL COMMITTEE

American Medical Association
Bureau of Legal Medicine and Legislation
November 29, 1932.

Dr. W. L. Burrage, Secy.,
Massachusetts Medical Society,

Keeping the promise I made you during our recent Secretaries' Conference, I submit the following statement of the Joint Congressional Committee to study and report on the laws now in force with respect to "veterans."

Senator Arthur R. Robinson, Indiana
Senator Smith W. Brookhart, Iowa
Senator Henry D. Hatfield, West Virginia
Senator David J. Walsh, Massachusetts
Senator Walter F. George, Georgia
Representative John McDuffie, Alabama
Representative Jacob L. Milligan, Missouri
Representative John W. Boehne, Jr., Indiana
Representative John Taber, New York
Representative Burnett M. Chiperfield, Ill.

The Committee must make its report not later than January 1, 1933.

Yours truly,
WM. C. WOODWARD, *Director*.

ARGUMENTS FOR THE OPEN DOOR TO MEDICAL PRACTICE

November 26, 1932.

Editor, *New England Journal of Medicine*,

Recent efforts to limit the oversupply of doctors, as evidenced in a resolution to this effect published in your issue of November 17, 1932, seem hardly compatible with the ethics of the great and liberal

profession of medicine. The resolution passed and circulated by the county medical society of Georgia openly seeks national coöperation to limit the "overproduction of doctors" by "requesting the medical colleges to reduce the number of graduates each year". Though in your editorial comments on this resolution you mildly disapprove of it, you do not mention among your objections what seems to be the most deplorable feature of such propaganda.

Namely, is it fair, is it just for those within the medical fold to deny admission to those outside the fold on the grounds of oversupply? What moral right have the men who have already obtained their medical education to deny such an education to the young men and women eager to enter the medical profession? Does not such a proposal strike at the very roots of the American conception of fair play and equality of opportunity?

What are the young men and women interested in a professional career to do? The doctors say that there are too many doctors. The lawyers very vehemently say that there are too many lawyers. The engineers, the dentists, the teachers and other professionals all say there are altogether too many already in their respective professions. And they can prove their cases as well as the doctors. So that if an oversupply is a justifiable reason for limiting enrollment to a professional school, what are the young professionally minded men and women to do?

There is already at the present time a shameful condition in medical education in that thousands of qualified applicants are yearly turned away from medical schools in the United States. Apropos of this may not the growth of the cults be due to some extent to the already existing stringent restrictions for admission to the medical field? It would be interesting to make an inquiry as to whether the leaders in the cult movements who are frequently really able men have not chosen the back door to medicine because they were denied admission through the front door. You speak triumphantly, in the same issue, of the chiropractic bill having been defeated by over 100,000 votes. It would seem that the more striking feature of this result is not the defeat but the fact that almost 40 per cent of the voters were in favor of this bill.

I had the shock of my life when I went abroad and found that our boasted equality of opportunity, at least in the educational field, is a fiction compared to the reality abroad. In the universities of Germany and Austria every man who qualifies must be admitted to the University to study law or medicine or anything he chooses. There is no such excuse as lack of space and facilities. Space and facilities must be made for every one who wants to study. The only restrictions are occasionally for foreigners and non-citizens, but no citizen is deprived of the opportunity to study the profession of his choice in foreign countries.

The present low economic level of doctors and other professional men is of course a problem. Oversupply may or may not be the cause, but even if it is let us not degrade the profession of medicine by seeking relief through such inherently unworthy measures against the aspiring youth of America.

Yours very truly,
JOSEPH I. PASCAL, M.D.

A WARNING TO HOSPITALS

The Commonwealth of Massachusetts
Department of Public Health
State House, Boston

December 12, 1932.

To Hospital Superintendents:

A few months ago this Department had occasion to call to the attention of all hospitals the importance of immunising their nursing staff against typhoid fever. This letter was prompted by the death of a nurse who though unimmunized had been caring for an unrecognized case of typhoid. Within the past two months two other student nurses in different sections of the State have contracted typhoid fever while working on wards containing typhoid cases. Neither of these nurses had been immunised against typhoid.

The immunisation of nurses against certain diseases with which many come in contact has been accepted for a number of years as sound practice, valuable to the hospital and nurse alike. In most Massachusetts hospitals it is required of all nurses entering training. That three such cases should have occurred during the past year is no credit either to Massachusetts or to its hospitals.

May we once more strongly urge upon you the importance of this procedure for each and every nurse attending patients in your hospital.

Yours truly,
GEORGE H. BIGELOW, M.D.,
Commissioner of Public Health.

RECENT DEATH

ST. GERMAIN—DR. JOSEPH PIERRE ST. GERMAIN died in New Bedford, Massachusetts, November 17, 1932.

Dr. St. Germain was born in 1863, graduated from the Dartmouth Medical School in 1885 and had practiced in New Bedford for many years. He joined the Massachusetts Medical Society in 1893 and was also a Fellow of the American Medical Association. He is survived by his widow, Mrs. Alice M. St. Germain.

OBITUARY

EDWARD WYLLYS TAYLOR

In the death of Edward Wyllys Taylor on August 17, 1932, the Boston Society of Psychiatry and Neurology sustained an irrevocable loss. For many years a member and constant attendant at meetings of this Society he watched a small local group grow into an organization commanding widespread interest and respect. Wyllys Taylor was not only a member but twice served as president, for when

preparations were made to celebrate the fiftieth anniversary of its founding this Society could think of no man to honor above him. Moreover it was largely through Taylor that this Boston Society was for years represented in our national organization and on the editorial boards of America's two journals of neurology.

His numerous communications before us served as models both as to substance and delivery; even more to be remembered were his frequent discussions which were incisive, sound and always generous.

It is a matter of chance that this brief memorial should be read tonight at a clinic given by his successors in the hospital which he so faithfully served, yet how fitting!

It is our wish that this slight appreciation of our fellow member and friend be incorporated in the minutes of the Society, and that copies be sent to his family and published in the *New England Journal of Medicine*.

HENRY R. VIETS,
JAMES B. AYER.

November 17, 1932.

NOTICES

DR. A. WARREN STEARNS RESUMES PRACTICE

Dr. A. Warren Stearns will resume practice on December 1, 1932, 520 Commonwealth Avenue, Boston. Commonwealth 2010.

CHANGE OF OFFICE

Dr. Richard F. O'Neil announces the removal of his office to 379 Beacon Street, Boston, on January 1, 1933.

UNITED STATES CIVIL SERVICE EXAMINATION

Junior Medical Officer (Interne), $2,000 a Year

Saint Elizabeth's Hospital, Washington, D. C.

Applications must be on file with the manager of the Fourth United States Civil Service District, Washington, D. C., not later than January 10, 1933.

The United States Civil Service Commission announces an open competitive examination for the position named above. Vacancies in this position at Saint Elizabeth's Hospital, Washington, D. C., and vacancies occurring in positions requiring similar qualifications, at approximately the same rate of pay, will be filled from this examination, unless it is found in the interest of the service to fill any vacancy by reinstatement, transfer, or promotion.

CHANGE OF DUTY AND STATION OF COMMISSIONED OFFICER OF THE UNITED STATES PUBLIC HEALTH SERVICE IN NEW ENGLAND

Dr. Alice Hamilton, Consultant. Directed to proceed to Washington, D. C., in connection with field investigations of industrial hygiene.

RADIO HEALTH MESSAGES

DECEMBER, 1932

Sponsored by the Public Education Committee of the Massachusetts Medical Society and the Massachusetts Department of Public Health.

Courtesy WBZ. Tuesdays, 4:15 P. M.

December
27 Hemorrhoids

STATE HOUSE BROADCAST

Sponsored by the Massachusetts Department of Public Health.

Courtesy WEEI. Fridays, 12:30 P. M.

Health Subjects of Public Interest discussed by the Division Directors of the Department.

RADIO HEALTH FORUM

Queries from the public are answered under the sponsorship of the Department of Public Health.

Courtesy WEEI. Fridays, 4:50 P. M.

Questions on Health and Prevention of Disease may be sent to Radio Health Forum, State Department of Public Health, State House, Boston.

REPORTS AND NOTICES OF MEETINGS

BOSTON CITY HOSPITAL STAFF CLINICAL MEETING

The Boston City Hospital Staff held the stated meeting on Tuesday evening, November 22, 1932, at 8:15 P.M., in the Cheever Amphitheater. The meeting was devoted to a discussion of Physiotherapy in various clinical conditions. Dr. Otto J. Hermann presided.

Dr. Joseph Resnik considered the use of physiotherapy in hemiplegia, poliomyelitis and facial paralysis. At the onset of hemiplegia, while the patient is in coma and acute paralysis, ultraviolet light may be of help in healing bedsores. The arm should be placed in a splint that reaches to the ends of the fingers, in order to prevent contracture deformities. The leg affected should be treated similarly to avoid foot drop. Wherever a splint is used, the members should be treated daily with massage to ease the pain and discomfort of the paralyzed muscles and to prevent ankylosis.

Interrupted galvanism is beneficial in that it stimulates the muscles to contract and keeps them in a healthful condition. Some clinicians feel that this is harmful in that the motions are too vigorous, but a mild current may be used and undue shocks thus avoided. Following such treatment in bed, there is the ambulatory period when the patient learns to use the paralyzed member. In most cases the return of function is only partial, and to save the patient mental anguish and the loss of interest in living, occupational therapy or some form of useful exercises (feeding and clothing) is of great value.

Dr. Stanley Cobb discussed the mechanism of hemiplegia and illustrated his remarks with a diagram of the higher nerve centers. The spinal cord reflexes and the vestibulospinal tract are capable of initiating standing; the rubrospinal tract coming from the red nucleus and corpus striatum, together with the reticulospinal tract, is the chief nerve mechanism involved in walking; the cerebral cortex through the cerebrospinal tract controls finer voluntary motions. When the latter is eliminated from control, leaving the first two sets of tracts in control of the muscles, the result is a hypertonicity or spastic paralysis of the muscles. Dr. Cobb showed two specimens from patients suffering with hemiplegia. In one brain the hemorrhage had occurred in the internal capsule, and in the other it had involved the hind brain.

Dr. Resnik continued with a discussion of the part that physiotherapy plays in the treatment of infantile paralysis. In the early stages of the disease, ultraviolet ray treatments are of value. Laboratory studies show that they raise the calcium and phosphorus content of the blood, increase the red cell and platelet counts, and stimulate the processes of immunization. Clinically the children seem much improved with this treatment.

Radiant heat helps the tenderness and pain of the early disease. As soon as the acute processes have subsided, the muscle tests must be conducted to determine the degree of involvement, and muscle training must be begun. Interrupted galvanism is of value in beginning motion, because of the psychological effect of muscle action upon the patient.

Dr. Joseph Shortell spoke of the problems involved in restituting limbs stricken with infantile paralysis. Some patients regain from 80-90 per cent of their muscle function, while others have scarcely any return of motion, and there is no way of prognosticating which will be the favorable cases. Most of the muscles regain their function within six months, but treatment should be continued over a period of three years. Patients should be seen at intervals of from three to six months for several years in order to insure against deformities that follow unequal strength of antagonistic muscle groups.

Three sets of cases were shown by Dr. Shortell. The first showed complete recovery by means of physiotherapy; the second had functionally useful lower limbs with braces; while the third was much benefited through operative procedures.

Dr. Resnik, in speaking of facial paralysis, stated that this affliction may be central or peripheral, and that the latter is most frequently seen. With peripheral paralysis, the nerves to muscles on one entire side of the face are involved, while the central type usually excludes the muscles of the forehead and sometimes those of the eye. Chilling of the nerve from exposure often leads to this affection, and such cases when left alone may develop permanent deformities. The comfort and speed of recovery are greatly enhanced by use of physiotherapy such as radiant heat, negative galvanism, both straight and interrupted, and later gentle massage and facial exercise.

Dr. Resnik presented a case that had facial involvement following a mastoidectomy. Faradism and interrupted galvanism showed what was considered between 95-100 per cent reaction of degeneration. On that slight difference the patient was treated with physiotherapy and recovered.

Dr. Edward J. Monahan spoke of physiotherapy, nerve anastomosis, and masseter muscle transplant in overcoming the defects of facial paralysis following operative procedures, and demonstrated several patients illustrating these points.

Dr. Otto J. Hermann read a paper on "Physiotherapy in Fractures." Massage is one of the few forms of treatment that has been handed down from ancient civilizations. In the records pertaining to the early life of the Greeks, Chinese and Hindus, massage is frequently mentioned as alleviating pain and favorably influencing the course of disease.

Today the surgeon finds particular value in applying physiotherapy to fractures during all stages of the injury. Even before the fracture is reduced, light massage and well applied heat will rid the tissues of excess fluid and facilitate an easy reposition and fixation.

During the convalescent period fixations must be respected, but even so early massage can be applied together with radiant heat. In wrist fractures, for instance, massage can be begun as early as the third day. Not only does the ease and comfort of the patient improve under this régime, but the tonicity of the muscles is preserved, the joints remain mobile, and there are no terminal, painful, traumatic arthritic joints.

In the healed stage, massage can save the patients weeks and months of economic time. During this period it may be more vigorous and applied longer before fatigue ensues.

The masseur may be of invaluable assistance in beginning active motion, but here he should be carefully checked by the surgeon. Forced motion should be avoided, if possible, and when used should be practiced under general anesthesia. After active motion a reëducation of the muscles is often necessary, and here special exercises under supervision have been found of great value at the Boston City Hospital.

Dr. Hermann spoke briefly of some of the mechanical and electrical agents that have proved of value in the treatment of fractures. The whirlpool bath is used for its heat and motion. The septic compound fractures (not of the fulminating type) with some degree of union, and simple fractures with considerable stiffness are especially benefited by this device, for it is very efficient in stimulating circulation and softening induration.

The sinusoidal current is used for stimulating muscle tone in atrophy of disuse. It is used in

fresh cases, and should not be given to the point of muscle exhaustion. The infra-red type of radiation is also valuable in fresh fractures.

Diathermy is extensively used to stimulate the cases with delayed union. There has been a question recently as to whether this treatment does not also cause fibrosis of the deeper tissues, but well controlled treatment is of unquestioned benefit.

Dr. Stanley Cobb showed slides illustrating the technique of determining the effect of physical and chemical agents on the circulation of the brain. In conjunction with Dr. Resnik, experiments were carried out to determine the changes in circulation of the brain caused by positive and negative galvanism. Of 19 trials with positive galvanism, two led to vasodilatation, 11 to vasoconstriction and five gave no change. Of 10 trials with negative galvanism, five gave vasodilatation, two vasoconstriction and two no change. On the basis of this evidence, it may be beneficial to use positive galvanism in early brain hemorrhage to check the extent of the brain damage.

Dr. Gyrdie W. Dickinson and Dr. Richard P. Stetson presented several cases. Dr. Stetson showed a case of hemophilia which had been treated with positive galvanism following subcutaneous hemorrhages. Mention was made of the possible influence of such treatment in constricting the vessels and thus checking further hemorrhage.

BOSTON CITY HOSPITAL

STAFF CLINICAL MEETING

Wednesday, December 28, 1932, at 8:15 P.M.
Cheever Amphitheatre

Dr. Robert M. Green. Introductory Remarks on the Work of the Gynecological and Obstetrical Service.

Dr. John T. Williams. Primary Carcinoma of the Vagina.

Dr. Frederick L. Good. The Course of Pregnancy and Labor following Operation for Suspension of the Uterus.

Dr. Joseph P. Cohen. Toxemias of Pregnancy.

Dr. Reginald D. Margeson. Treatment of Carcinoma of Uterus.

Dr. Benedict F. Boland. Treatment of Endocervicitis by Coring of the Cervix with the Radio Knife.

Dr. Emilio D'Errico. Inversion of the Uterus.

Dr. Kenneth G. Farnsworth. Trichomonas Vaginalis.

Dr. Benjamin Tenney, Jr. Pregnancy Complicated by Cirrhosis of Liver with Successful Termination.

COMMITTEE ON HOSPITAL CLINICS.

SOCIETY MEETINGS
CONGRESSES AND CONFERENCES

December 22—Clinics in Medicine at Peter Bent Brigham Hospital. See page 1118, issue of December 15.

December 28—Boston City Hospital. See notice above.

January 12 - May 12—The William Harvey Society. See schedule on page 765, issue of October 27.

January 19 - May 17—New England Physical Therapy Society. See schedule on page 1010, issue of December 1.

February 6-10—The American College of Physicians. See page 765, issue of October 27.

February 8 - April 5—The New England Heart Association. See page 1011, issue of December 1.

February 17 and 18—The New England Hospital Association. See notice on page 911, issue of November 17.

DISTRICT MEDICAL SOCIETIES

ESSEX NORTH DISTRICT MEDICAL SOCIETY

January 4—Wednesday, Semi-Annual Meeting. Program to be announced.

May 3—Wednesday, Annual Meeting. Program to be announced.

ESSEX SOUTH DISTRICT MEDICAL SOCIETY

Tentative Program
1933

Wednesday, January 4, 1933—Danvers State Hospital, Hathorne. Clinic 5 P. M. Dinner 7 P. M. Speaker: Dr. A. Warren Stearns, Dean of Tufts College Medical School.

Wednesday, February 1, 1933—Council Meeting, Boston.

Wednesday, March 8, 1933—Lynn Hospital. Clinic 5 P. M. Dinner 7 P. M. Speaker: Dr. Soma Weiss, Boston City Hospital. Subject: Arterial Hypertension.

Wednesday, April 5, 1933—Essex Sanatorium, Middleton. Clinic 5 P. M. Dinner 7 P. M. Speaker: Dr. Wilson G. Smillie, Professor of Public Health Administration, School of Public Health, Harvard University. Subject: Common Colds.

Thursday, May 4, 1933—Censors' Meeting, Salem Hospital, 3:30 P. M.

Tuesday, May 9, 1933—Annual Meeting. Salem Country Club, Forest Street, Peabody. Golf in afternoon; greens fee $2.00. Dinner at 7 P. M. Speaker: Dr. George Burgess Magrath. Subject to be announced later. Ladies invited.

R. E. STONE, M.D., Secretary.

FRANKLIN DISTRICT MEDICAL SOCIETY

Meetings of the Franklin District Medical Society will be held at the Weldon in Greenfield on the second Tuesday of January, March and May.

CHARLES MOLINE, Secretary.

MIDDLESEX EAST DISTRICT MEDICAL SOCIETY

The program of the Middlesex East District Medical Society for the coming year is as follows:

January 11 at Wakefield.

March 15 at Melrose.

May, at the Meadowbrook Club, Reading.

ALLAN R. CUNNINGHAM, Secretary.

MIDDLESEX SOUTH DISTRICT MEDICAL SOCIETY

January 13—See notice on page 1123, issue of December 15.

NORFOLK DISTRICT MEDICAL SOCIETY

January 31, 1933—Roxbury Masonic Temple, 8 P. M. Subject: "Stomach Surgery"—Motion pictures. Dr. William R. Morrison.

February 28, 1933—Time and place to be announced. "The Diagnosis and Treatment of Anemia," by Dr. William P. Murphy.

March 28, 1933—Time, place and subject to be announced. Speaker will be Dr. J. P. O'Hare.

May—Annual Meeting. Time, place and subject to be announced.

FRANK S. CRUICKSHANK, M.D., Secretary.
1695 Beacon Street, Brookline.

SUFFOLK DISTRICT MEDICAL SOCIETY

Wednesdays at 8:15 P. M.

January 25, 1933—General Meeting in association with the Boston Medical Library at the Boston Medical Library. Titles and speakers to be announced later.

March 29, 1933—Clinical Program, Massachusetts General Hospital.

April 26, 1933—Annual Meeting. Election of Officers. Scientific Program—Titles and speakers to be announced later.

The Medical Profession is cordially invited to attend all of these meetings.

WILLIAM H. ROBEY, M.D., President,
LELAND S. McKITTRICK, M.D., Secretary,
HILBERT F. DAY, M.D., Boston Medical Library.

WORCESTER DISTRICT MEDICAL SOCIETY

Wednesday, January 11—Dinner and meeting at the Worcester City Hospital. Paper by Dr. Morris Fishbein, Editor of the Journal of the American Medical Association.

Wednesday, February 8—Dinner and scientific meeting at the Worcester State Hospital. Program to be announced later.

Wednesday, March 8—Dinner and scientific program at the Memorial Hospital, Worcester. Program to be announced later.

Wednesday, April 12—Dinner and scientific meeting at the Rutland State Hospital. Scientific program to be announced later.

Wednesday, May 10—The Annual Meeting. Place and program to be announced later.

ERWIN C. MILLER, Secretary.

BOOK REVIEWS

The Mastoid Air Sinuses. **By Dr. KENJI YAMASHITA. Kyoto. Anatomical Institute of the Imperial University. 1932.**

This monograph consists of a series of six papers dealing respectively with the porosity of the macerated mastoid, the individual variability of "pneumatisation" of the mastoid, the correlation between the "pneumatisation" and the various anatomical masses of the mastoid, the mucous membranes of the air cells in the mastoid, surgical investigation of the perilabyrinthine cells and surgical investigation of the "pneumatisation" of the apex of the pyramid. The work is illustrated by 33 admirable engravings and a score of line drawings in the text. As a contribution to a highly specialized aspect of clinical anatomy, it should be of particular interest to otologists.

Alcohol and Man. The Effects of Alcohol on Man in Health and Disease. **Edited by Haven Emerson. Published by the Macmillan Company, New York, 1932. Price $3.50.**

Often the physician is asked questions about alcohol by intelligent laymen. What is its effect? How does it act? Does it affect heredity? Does it cause insanity? What value has it as a medicine? Does it cause disease? What is its relationship to crime? These are samples of their queries. Not infrequently the physician can not answer the question satisfactorily, and it is not always easy to get the needed information. Sometimes the layman would be glad to read about alcohol, but where to refer him, presents a problem. "Alcohol and Man" is just the book to give this information. It contains the facts about alcohol as known today, presented by men competent to present the knowledge, doing it simply so as to be read by lay people. Very often in the technicalities of physiology, pharmacology, psychology, pathology, statistics, etc., the physician actually is a layman and will find this sort of presentation welcome.

Under the editorial supervision of Emerson, Director of the Public Health Institute at Columbia, aided by Christian of the Peter Bent Brigham Hospital, Hunt of Harvard, Hunter of the New York Life Insurance Company, Lieb of Columbia, Miles of Yale, and Stillman of the Rockefeller Institute, a group of men eminent as physiologists, pharmacologists, biologists, anatomists, geneticists, pathologists, physicians, psychologists, psychiatrists and statisticians, each familiar with certain phases of the alcohol problem, have discussed alcohol in relationships that concern man, his health and well-being. This is not propaganda for or against alcohol; some of the writers have "dry" and others "wet" sympathies. It is a well-written book, readable, not too long (429 pages), not expensive, which should fill a great need as a source of information about alcohol not otherwise readily obtained from many scattered sources.

The reader will find that alcohol is very complex in its effects and relationships. It is indispensable to the druggist as it is required in making many frequently used medicines, but the therapeutic uses of alcohol are not very numerous; it is a poison, and yet it is a food; it is a depressant, and still in another sense it is a stimulant, possibly as an inhibitor of inhibitions; though it can cause certain pathological changes, these are not numerous, and its habitual use in moderate amounts by normal healthy adults appears to be without any permanent, deleterious, organic effect; alcohol increases the senses of bodily comfort, obliterates worry and the drag of time and narrows the scope of attention; it decreases the speed and increases the errors of coördinated muscle movements and mental processes, at the same time increasing the operative's contentment with his performance; alcohol contributes to crime but is not a specific cause of crime; moderate users of alcohol probably live as long as total abstainers, but usually they do not continue to be moderate drinkers; alcohol is a direct and principal cause of several types of mental disease, and these come principally in middle life when efficiency and productivity should be at its height; alcohol use increases mortality as shown by variations in excess mortality of men over women in comparison with variations in consumption of beer and other alcoholic beverages. These statements emphasize the complexity of alcohol effects and should whet the appetite to read in detail in this book what is said about alcohol as it affects man.

BOOKS RECEIVED FOR REVIEW

Excitability—A Cardiac Study **by W. Burridge. Published by Humphrey Milford, Oxford University Press. 208 Pages. Price $3.85.**

The Child and the Tuberculosis Problem **by J. Arthur Myers. Published by Charles C. Thomas. 230 Pages. Price $3.00.**

Internal Medicine—Its Theory and Practice in Contributions by American Authors. **Edited by John H. Musser. Published by Lea & Febiger. 1316 Pages. Price $10.00.**

Diagnosis and Treatment of Diseases of the Thyroid Gland **by George Crile and associates. Published by W. B. Saunders Company. 508 Pages. Price $6.50.**